

# What older people want:

## A catalogue of co-designed ICT concepts

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# Introduction

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## Introduction

This report is an output of the Sus-IT project, which has been looking at how to sustain ICT use in older people to support autonomy and independence (<http://sus-it.lboro.ac.uk/>). The project recognises the well-known problem of digital exclusion in the older population, which refers to the lack or difficulty of engagement with new technology by older people unfamiliar with its' benefits, interfaces and languages. However, it also recognises the possibility of disengagement with technology, due to the decline of cognitive and sensory-motor processes with ageing and the lack of support and resources for keeping up to date with rapid changes in the technology itself. Other parts of the project have been looking at forms of engagement with existing technology and the role of learning and using ICTs in community settings. Here, we describe a series of new technology product concepts for an older market. These have emerged through another kind of engagement by older people, not with the technology as such, but with the process of designing it.

Involving older people in the design of digital technologies is surprisingly rare in the industry. Many products are designed with young people or young families in mind, as reflected in market research and product advertising. Yet the size of the over 60s consumer market is large and growing, and many of its members are active users of digital technologies on a daily basis. In fact, the diversity of engagement is shown in recent research by Ofcom which found that although 51 percent of over 65s do not use the internet, 27 percent use it regularly, and a growing minority are beginning to use other internet devices such as mobile phones, smart TVs and

tablets<sup>1</sup>. This diversity is a challenge for engaging older people in design, but also an opportunity. If an inclusive process could be found for doing this, it has the potential to deliver a large range of insights for designers about what older people want from technology and in what form. One size is unlikely to fit all, and this is good news for technology companies and service providers who are looking either to customise their products for older people, or to occupy an unfulfilled niche in the market.

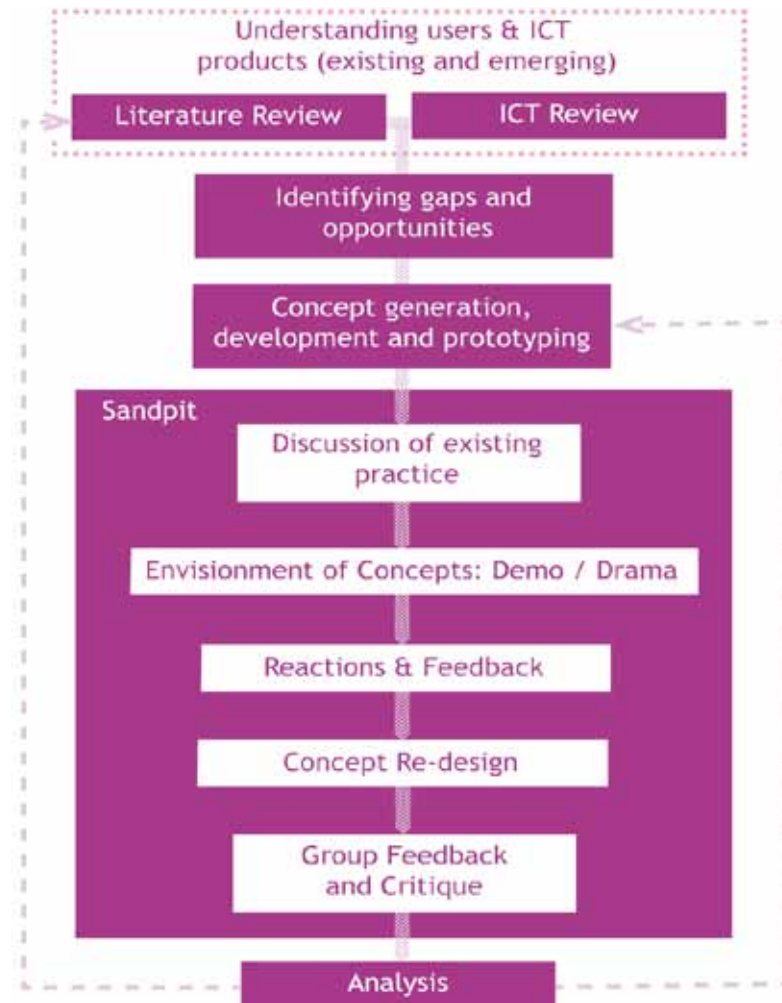
In the next section we describe such a process, based on the presentation of open-ended product concepts for re-design. Concepts were presented to both digitally engaged and digitally unengaged people of retirement age, initially for discussion and feedback in a focus group setting. They were then split up into smaller groups led by designer/facilitators who encouraged them to consider what to keep, lose or change about the concepts. The initial and resulting designs are shown in the rest of the report, which takes the form of a product catalogue following some further description of the process. The designs and ideas in the catalogue are offered free under a creative commons license, requiring only accreditation for use (see page 2). We do this to stimulate the commercial development of selected concepts and promote the co-design process which generated them.

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<sup>1</sup> Adults media use and attitudes report. March 2012. Ofcom



## Methodology



A series of four themed ‘Sandpits’ were developed and hosted to enable older people to encounter digital product concepts through drama or demonstration and reflect on their value through discussion and re-design. The first three themes were based on debates in the literature about the need for simple computers for the elderly, the importance of memory and identity in later life, and the increase of social isolation with age. The fourth theme was suggested by findings from the first Sandpit which pointed to the iPad (and tablet devices in general) as a promising new platform for older people to customise themselves. This led to the following series of creative workshops:

Sandpit 1 - Custom computer for older people

Sandpit 2 - Supporting memory and identity in later life

Sandpit 3 - Combating social isolation

Sandpit 4 - iPad apps for older people

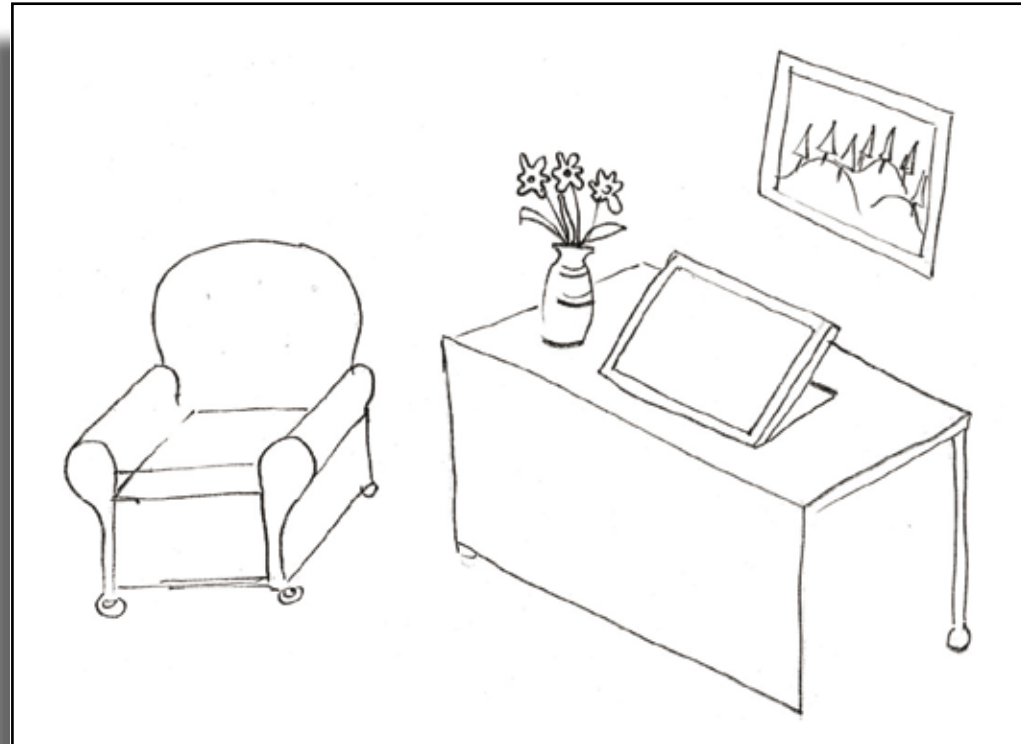
For each theme we worked with at least eight digitally engaged and eight digitally unengaged participants on separate days. Engagement focused narrowly on computer ownership and use, but was found to colour broader attitudes to digital technology in general and the understanding of internet technologies and services. Hence, digitally engaged participants in our study were defined as regular users of their own home PC (at least three times a week or more) while digitally unengaged participants did not own or use a PC.

In each Sandpit, every effort was made to make the day sociable and enjoyable for the participants as well as informative for us. We wanted the Sandpits to be a place of shared experiences and collaboration where older people can have a voice and role in specifying what they want from new and emerging ICTs. Lasting from 10 am to 3 pm with refreshments and lunch provided, the day began with an introduction, ice-breaker and discussion of participants' current practice in the area of an agreed theme. We then showed them three open and ambiguous conceptual prototypes that were our design responses to the theme. After each demonstration, participants were invited to give feedback and critique the concepts they had just seen. At the end of all three demonstrations, they were asked for their preferences and the price they were prepared to pay for each of the concepts on a ranking form. After lunch, the participants were split into smaller groups of about four. Each group was facilitated by a designer/researcher who played a sketching role to illustrate new product forms being discussed and applied technical knowledge to the implementation of the participants suggestions. At the end of the session, the groups reconvened and each team presented their concepts back to the group for further discussion, in the form of a design 'crit'.

In the catalogue which follows the concept inputs and outputs of each Sandpit are described in turn. For each Sandpit we show the evolution of each input concept created by us, as modified by the 'Non-PC' and 'PC' groups of older people.

In Sandpit 1, a single custom computer concept was shown for re-design by Non-PC and PC groups. In this case, each group was split into two subgroups and generated two variants of the core concept, or four in all. In Sandpits 2-4, three input concepts were re-designed by the Non-PC and PC groups. This usually resulted in a trio of related concepts (ours/Non-PC/PC) for each of the three input concepts, because groups were split into three subgroups to re-design one concept each. Additional concepts sometimes appear where subgroups generated more than one substantive new concept in the re-design session.

## Sandpit 1: Custom computer for older people





## Sandpit 1: Customer computer for older people

The general-purpose computer supports a multitude of different tasks through a common user interface. However, this interface, as represented by the Windows or Macintosh operating systems is overly difficult to learn and maintain for users wishing to perform only a subset of tasks. For this reason various attempts have been made to create custom computers for older people, with simplified interfaces and a stripped down set of applications. Here we envisage our own device called 'InfoLink', with a touchscreen display and additional interface features for further customizing the user experience. This was introduced through a three-act drama performed by professional actors, before giving participants the chance to re-design the domestic location, form and function of the device using printed and blank cards.

Hence, two Sandpit workshops were conducted on the 30th September and the 1st October 2009, showcasing the touchscreen InfoLink custom computer and interface.

## Conclusions

- A custom computer was highly attractive to digitally unengaged participants as a main computing platform. Digitally engaged participants saw it as an adjunct to their main computer.
- All participants were wary of auto-adaptive interfaces and wanted control over the way the computer responded to them
- The handling of on-line help by current computers was seen as inadequate and could be improved in numerous ways.

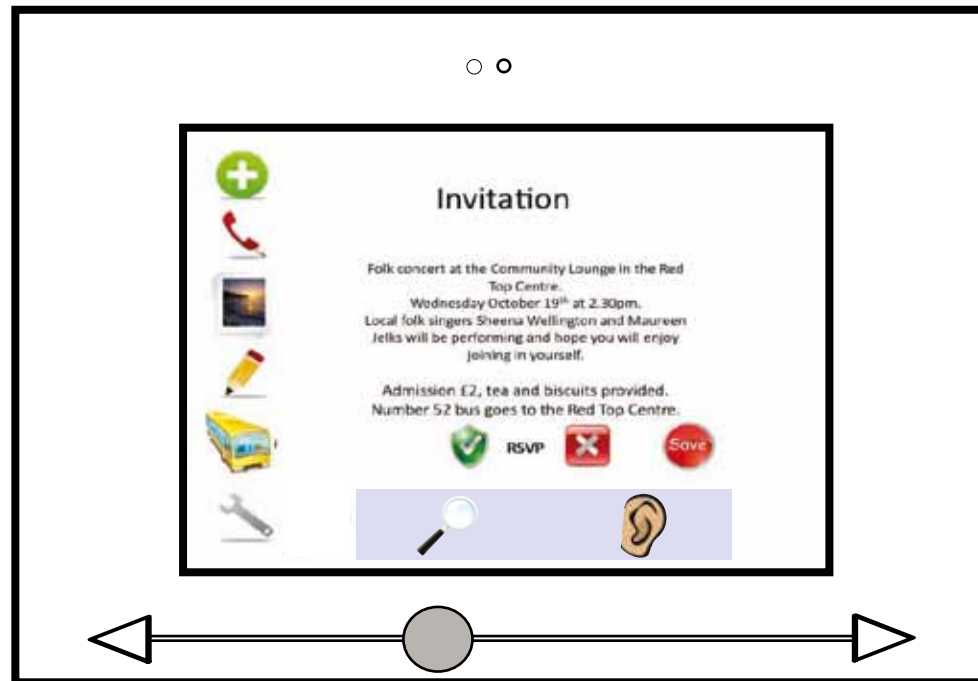
## Our concept



## InfoLink

The main custom computer concept was referred to as InfoLink and comprised a touch screen display with a physical slider on its bottom edge for switching modality and controlling the scale of the displayed image, volume of a screen reader and the rewind and forward features of a help facility. This was shown to have communications, web and telecare applications, which could be added to over time, as in the addition of apps on the iPhone. Its adaptive features included customised set-up, auto-adaptation to sensory and cognitive changes with age, and facilities for the management of repair when users get stuck - such as pause monitoring and the offer of on-line help. It was also shown to support a simple method of bringing up bookmarked web pages from printed 'web cards'.

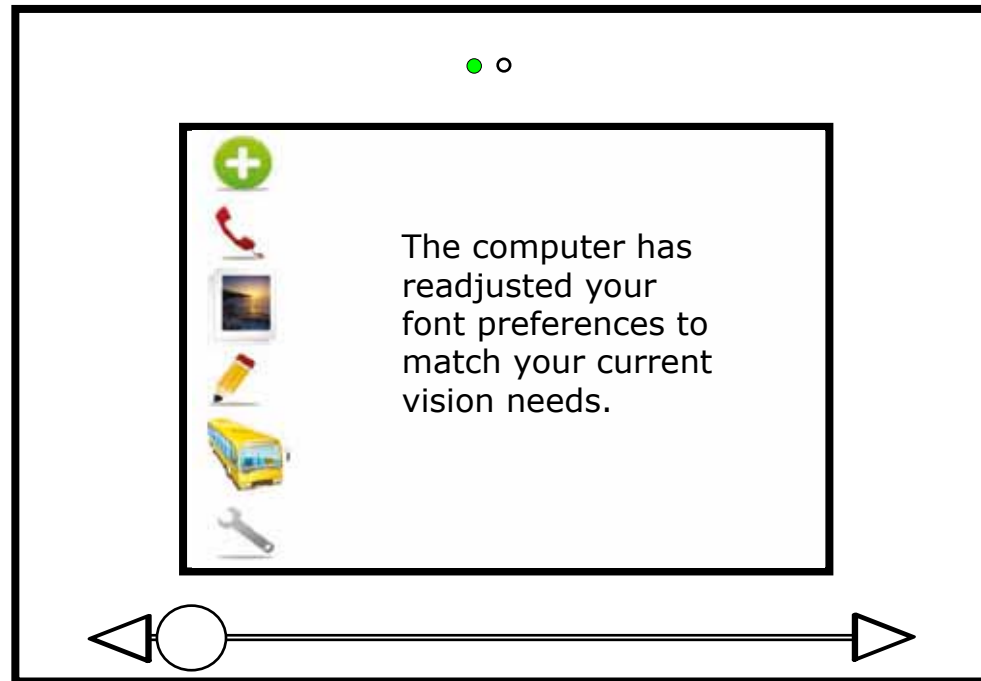
## Our concept



## Modality slider

A physical slider was built to the casing of the InfoLink device with a large control knob for easy grasping. This was shown to control sight and hearing settings, increasing font size or speaker volume as the slide is moved to the right. Other settings were suggested for controlling interface complexity and the forward and rewind functions of 'multimedia help' (see below).

## Our concept



## Auto-adaptation

The computer was shown to automatically adapt its interface and actions based on perceived changes in user behaviours over time. The example shows a message popping up to tell the user that the computer has detected a change in eyesight and adjusted the font size accordingly. This idea represents the approach of our adaptivity technology team whose members were David Sloan, Colin Machin, Matthew Atkinson, Matt Bell, Karen Li and Terri Gilbertson.

## Our concept



## Multimedia help

A range of additional help facilities were shown to be offered or available on Infolink. On-line help could be volunteered in speech by the system if it detected users getting stuck. Alternatively, users could use multimedia controls to pause, fast-forward, rewind or record the interaction at any point. Pause would indicate a problem to which the machine could suggest answers. Fast-forward would result in a list of possible next actions. Rewind would undo the previous interactions through a reverse animation. Record would begin recording the current interaction until pressed again. Recordings could then be stored to remind users of particular operations, passed to helpers to illustrate problems, or shared with others as forms of advice.

Our concept



Web cards

Web bookmarks were instantiated as physical cards that could be printed and filed in the home. Holding the card up in front of the built-in webcam triggered the associated webpage to be displayed. Cards could also be collected from magazines and swapped with friends.

## Re-designed concept

[Non-PC Group]



## Detachable wall display

The participants decided that they would like the device to be situated in an “office” part of the living room, a place where work is done. However they did not want the device to be deskbound as well and wanted to carry it into other parts of the house. The idea was for the device to be a cross between a hand-held tablet and a photo frame which could attach and detach to/from a wall. Like a photo frame, it can be fixed either vertically or horizontally, requiring the information displayed to adapt to the orientation of the device.

Going through the type of applications they wanted, the group felt that having a videophone application would be useful to allow them to connect with remote family and friends. For emails, the group expressed an interest in handwriting messages rather than typing them. A to-do list was preferred over the calendar as one participant remarked that she might only switch on the device once a week and therefore a calendar with reminders on it would be useless as events would have already passed. Telecare for emergencies, general web search ability, travel and local information, and an online encyclopaedia were applications the group would find useful. In addition, some of the participants were avid photographers and wanted a scanner and photograph application on the device for them to capture and manipulate existing prints.

# Re-designed concept

[Non-PC Group]



## InfoBook

In this group, participants liked the InfoLink device presented during the drama but would prefer it to be a tablet size and shape for use in the hand. This turned it into more of an 'InfoBook' device for finding useful information, and very close to the Apple iPad released after the Sandpit. Besides telecare and local travel information, the group suggested the inclusion of shopping, diary, calendar, email, and help applications. Help was considered to include help with using the device, but also help with sorting out domestic problems such as plumbing and decorating. The group also felt the device should be able to send or receive photographs and support the mapping of family history.



# Re-designed concept

[PC Group]



## Contollo-Phone

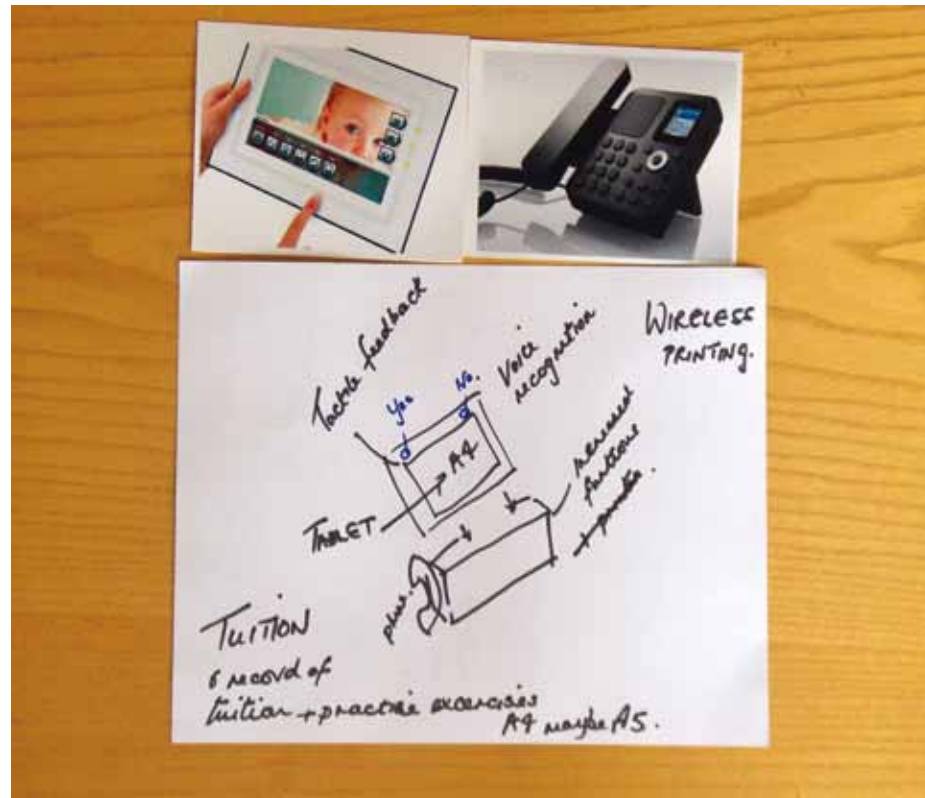
This group's approach was to create a device that was an adjunct to the television, designed for the lounge or living area. This was to make use of the familiarity and existing services provided by the television but also allow computer or online applications to be layered onto the television display.

Initially the group explored a videophone concept that would work together with the television. This concept was further developed into a combination between a remote control and a phone. The final idea was a slate-based television remote on one side and a phone on the other. On the phone side, which would support internet phone calls, there would be buttons for users to dial as you would on a typical phone and using the television screen as a video display. Turning it round, it becomes a remote control for the television. Besides using the remote side to control TV programmes, a user could call up a menu on the TV screen which would allow the access of services. The group chose NHS 24, general web search, memo, family calendar and photo sharing as services they wanted.

A stylus pen was preferred over a keyboard on the controller as this form of input was seen as easier and more intuitive to use. Handwritten text could be written on the flat cover surface of the device's remote side. This would be useful for emails, calendars and photos where personal messages could be scribbled on. The participants also suggested incorporating a biometric fingerprint device, instead of usernames and passwords, for identification and access to secure sites. In addition, it could be used to monitor a user's pulse as a form of health check.

# Re-designed concept

[PC Group]



## InfoHub

The device would be used as an information hub for older people unfamiliar with computers, allowing them to access information from health professionals and social workers as well as to store photographs.

The preferred form was a portable tablet that could be docked into a main unit with a phone handset attached to it. The phone allows them to make Internet phone calls. The tablet's screen would be A4 size as this allows information to be read easily and be portable enough for users to carry it about or to place it on their laps. The group also agreed that the size of the tablet should be interchangeable, allowing a bigger screen if one is required later in life. Rather than using a touch screen, the participants felt that tactile function keys should be used with a regular display. These buttons would be located around the border of the tablet and the functions of these buttons have to be easily recognizable by touch and sight to avoid confusion and frustration. This concept meant that the tactile function keys on the tablet border would be the primary input device instead of a keyboard or mouse. It was envisaged that if further functions were required, they could be placed on the docking station. The group also discussed the use of voice commands to activate or call up functions, which would be an alternative input solution to tactile function keys. Training and support would come from a variety of sources, ranging from telephone help, local help, and tuition video with practice exercises to a manual. Printing would be done wirelessly on a separate printer.

## Sandpit 2: Supporting memory and identity in later life

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## Sandpit 2: Supporting memory and identity in later life

Reminiscing and storytelling are important in making sense of life and re-assessing who you are, at a time when so many life changes can occur. For example, retirement, bereavement and moving home can be very upsetting and may affect connections to special people, places and things. Remembering and celebrating these connections could help in coming to terms with their loss and thinking about the future. It could also help with sharing and passing down family history and memories to younger generations.

Two Sandpit workshops were conducted on the 29th April 2010 and 6th May 2010 to explore older people's views on memory and identity, their experience of documenting personal memories and family history and how new ICT can support them.

## Conclusions

- Various forms of storytelling and reminiscing support were very appealing to participants.
- In particular, people wanted to record, embellish and share spoken stories relating to personal photographs and memorabilia.
- The form of support needs to be tailored to participants' existing infrastructure, equipment and skills.

## Our concept



## Travel Glasses

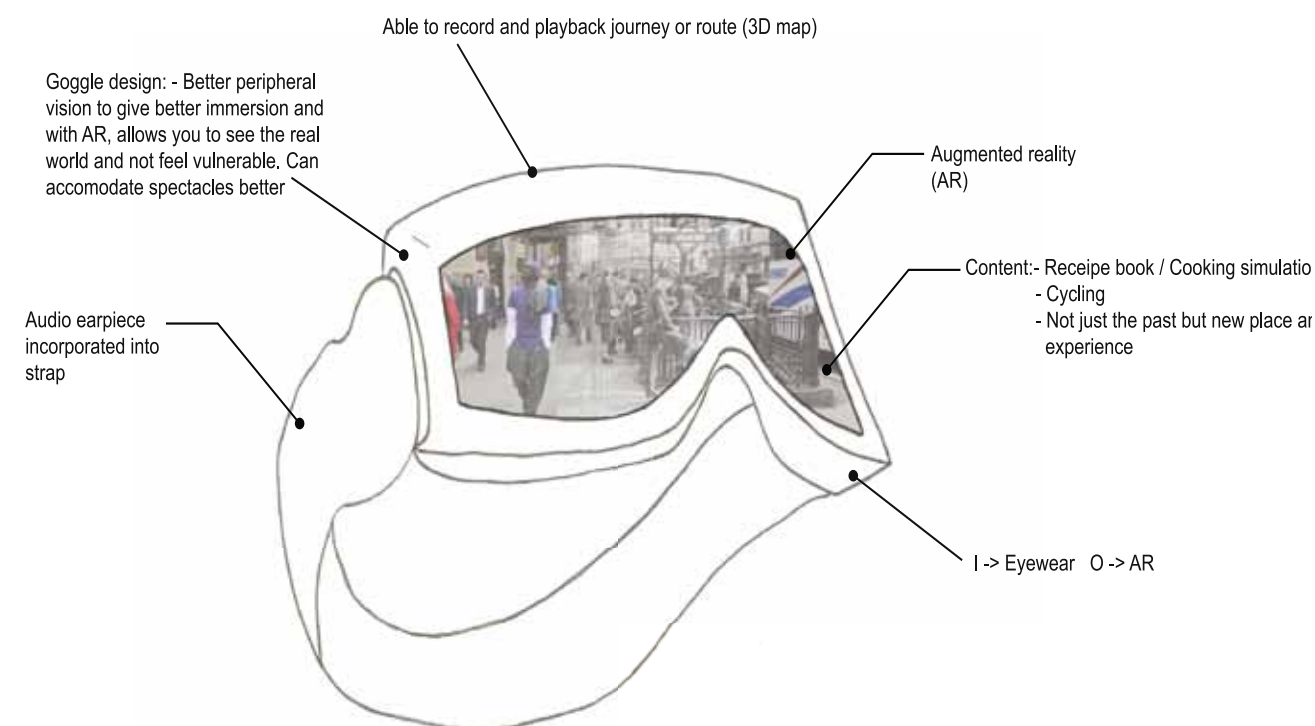
Description read aloud to participants:

*“Everyone has places which are special to them: where we have lived and worked, where they visited family, where we went on holiday. Re-visiting these places often brings back many memories of the times spent in them. However it is not always possible to travel back in person. It might be too expensive, time consuming or challenging to make long trips particularly in later life.*

*So imagine a pair of travel glasses that can transport you back to a special place. When you put them on it feels like you are back in the place itself and can look and move around in it. Now the place you see could be as it is today in the present time, or you could turn a dial to go back to the place as it was when you knew it.”*

# Re-designed concept

[Non-PC Group]



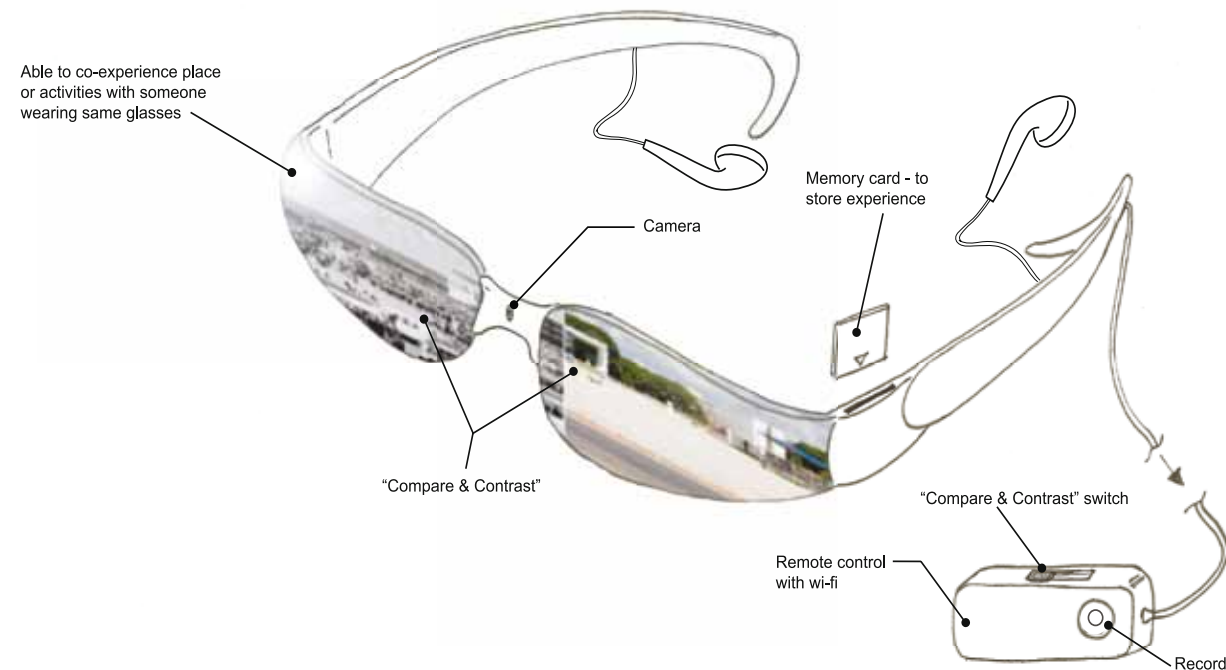
## Augmented reality goggles

Participants felt that the demo was bulky and didn't fit well if one wears spectacles. Being unable to see what was around you upon wearing the demo caused a sense of vulnerability. They also felt that they would like to be able to navigate their virtual surroundings freely rather than be restricted to pre-set routes or places.

The participants suggested a goggle-like design that accommodate glasses underneath and allows them to see through the real world. They also suggested an augmented reality overlay, showing what the actual scene looked like in the past. Old photos from home or public archives can be used to overlay onto real scenes.

A camera was incorporated into the design to record their journeys. The recordings will be played back within the eyewear later. More varied content could be made available. These might include cycling, cooking instructions or travelling to other locations.

## [PC Group]



## Communicating glasses

The group wanted a pair of lightweight sunglasses that allowed them to record journeys with live commentary and share them with others. They therefore added a camera, microphone and memory card slot to the eyewear. The camera was also seen to enable live shared experiences with another remote person, where what is seen through the glasses can be transmitted to another person elsewhere. The participants wanted a remote control so that that all the added functionality can be relocated onto it enabling the glasses themselves to remain lightweight.



## Our concept



## Reminiscence radio

Description read aloud to participants:

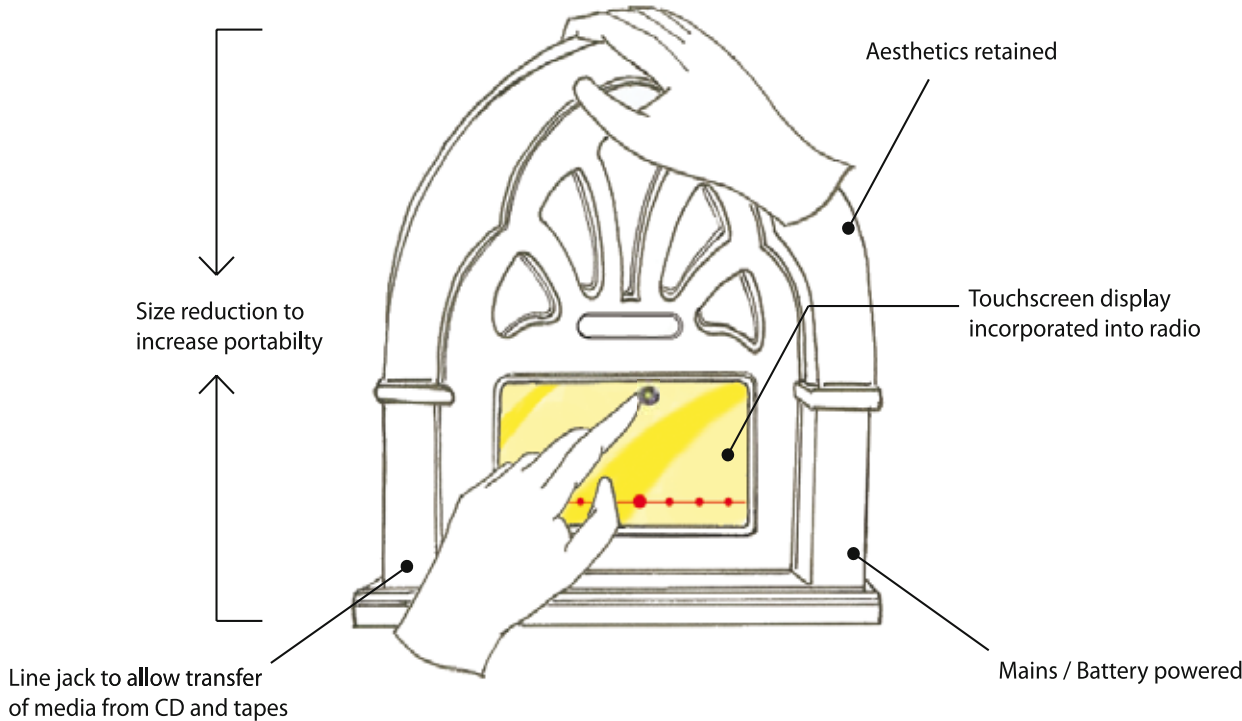
*“ In the TV programme ‘This is your life’, Eamonn Andrews or Michael Aspell used to surprise celebrities with a big red book containing stories of the person’s life. They would then invite them to a TV studio where people from their past would come onto the show to tell some of the stories.*

*Imagine instead of a book you have a radio, into which you can record your own stories. You can also get others to record their stories of you and even play music that you used to listen to.”*



# Re-designed concept

[Non-PC Group]



## Large-screen reminiscence radio

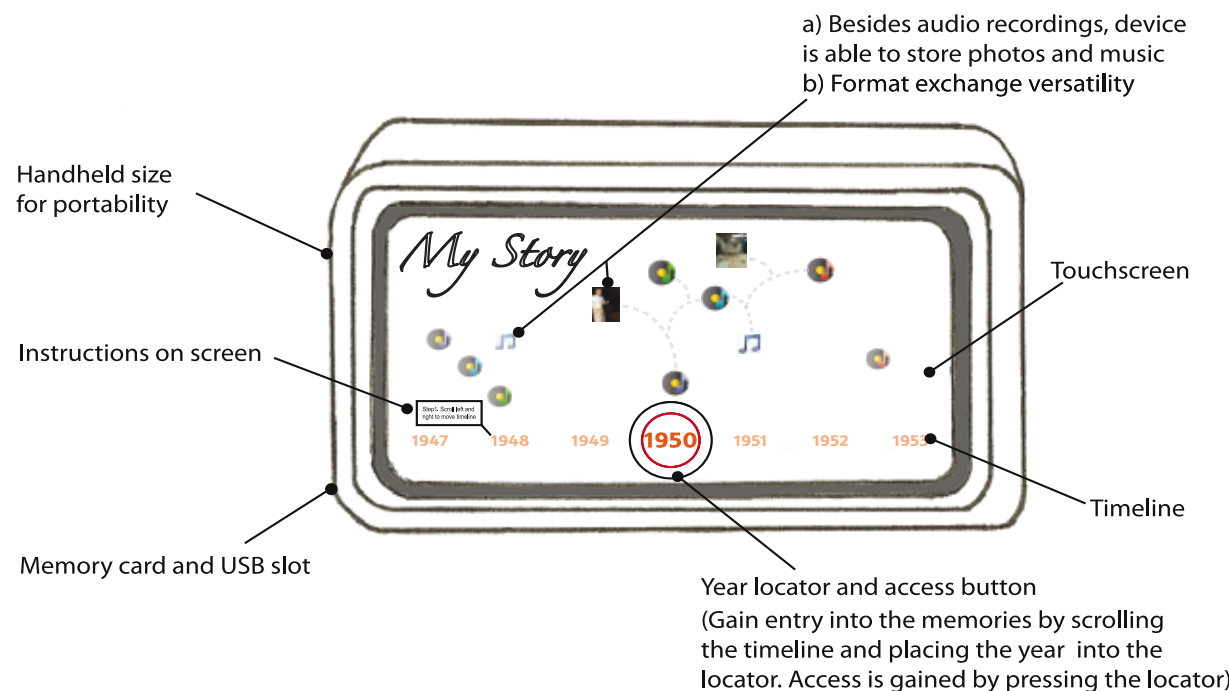
The participants wanted to keep the aesthetics of the radio but size was an issue. They liked the idea of a touch screen to display the timeline instead of a timeline knob and display idea suggested by the researcher.

The size of the radio was reduced and the touch screen display was made bigger. Besides being powered by the mains, it will also be battery powered to give it portability and flexibility in its location of use. A line jack will be included to allow audio recordings from existing CDs or tape to be transferred onto the reminiscence radio. Radio programmes can be played on the device. This will also allow the reminiscence radio to record broadcasts and enable the user to include interesting news or discussions into their narrative. The radio could also be used in conjunction with school's history lessons and projects as a way of transmitting oral histories or enquiring about the person's life through a historical event(s).

# Re-designed concept

[PC Group]

## Portable “MyStory” Device



The concept of the Reminiscence Radio was well liked by the participants. However the antique aesthetics and bulkiness of the demo was not to their liking. Dials on the demo also received negative responses as some found turning dials an effort due to arthritis.

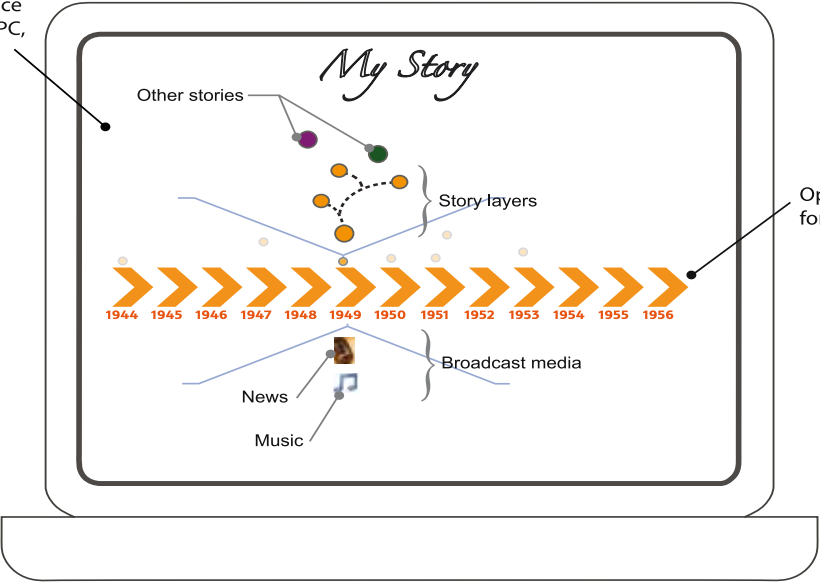
The Reminiscence Radio was redesigned to be a portable touchscreen device. Not only will audio recordings be accepted but photos and music can be added onto the timeline as well. The Portable “MyStory” Device must be versatile in its compatibility with different media formats so that family or friends who recorded their own perspective of an event on another device can transfer and playback their recordings on the Portable “MyStory” Device. Instead of an instruction book, on-screen instructions to facilitate learning and usage of the device should be implemented.

A year locator aid was incorporated onto the timeline by the researcher. As the timeline (i.e. years) is scrolled past a central locator circle, the year within the circle will be magnified. This is to accommodate users with poor eyesight. By pressing the locator, memories in that year can then be accessed.

# Re-designed concept

[PC Group]

Translate the Reminiscence radio into a software for PC, laptop or mobile devices



Option to organise in calender format than timeline

# Reminiscing Radio Software

Some participants felt that the Reminiscence Radio should be implemented as a software application for a laptop or PC.

The timeline featured two different sections. The top half above the timeline will contain personal recordings of stories while the lower half, below the timeline, will contain world or societal events. An option for a calendar format can be used with the timeline to give better organization of memories. Recordings, photos, music, weblinks and other broadcast media like news can be dropped into specific years along the timeline.

# Our concept



## Story Lamp

Description read aloud to participants:

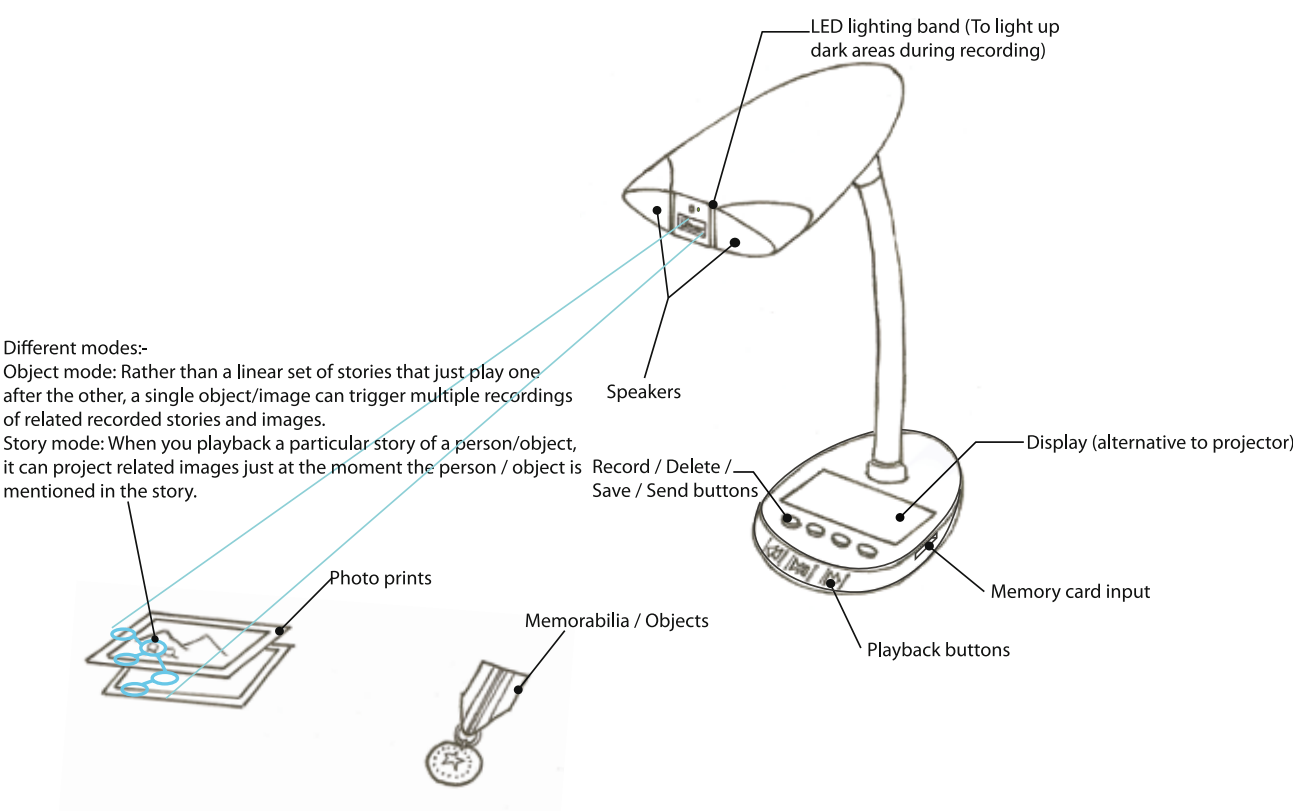
*“They say every picture tells a story, and this also seems to be true of special objects people keep as memorabilia in their homes. Imagine you could record those stories for yourselves, your family or friends, and attach them somehow to your photographs and things.*

*When you bring an object, photograph or album into view under the lamp it can recognise it and play any stories that you recorded when it saw the thing before. The first time you record a story, the lamp would take a picture of the object to remember it for next time, and associate the recording with the picture. Further stories could be recorded and played as further tracks.*

*The lamp also displays digital photographs. You take the memory card out of a camera, put it in the lamp and switch it on. The lamp can be pointed to a wall or table to display the photos in a slide show. Gestures under the lamp could control the photos. You can record stories on these images as well and playback with or without the sound on.”*

# Re-designed concept

[Non-PC Group]



## Multimodal lamp

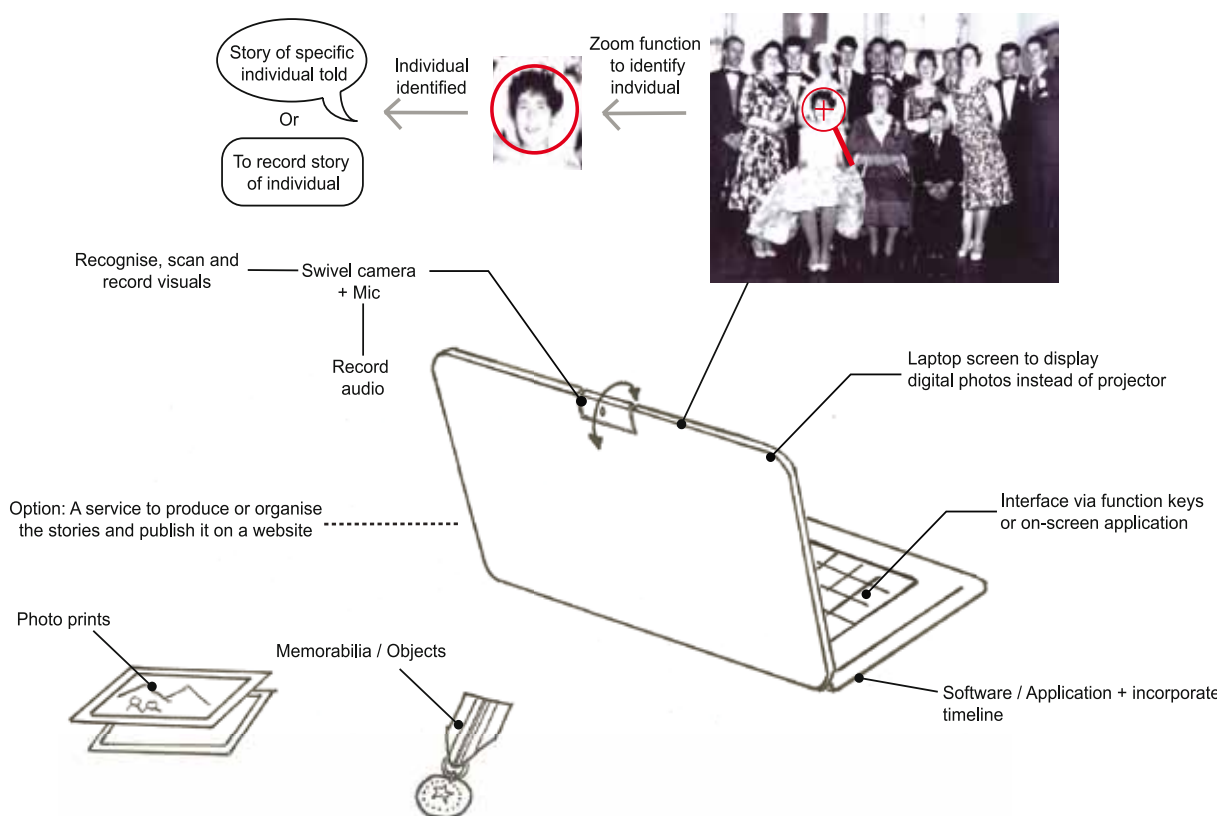
Participants had no issues with the Story Lamp but some new ideas were put forward.

Rather than a linear set of stories that just play one after another when photos or objects are recognized by the lamp, different narrative modes were suggested. When a photo or a single object is placed under the lamp (Object mode), the identified photo or object can trigger multiple recordings of related stories and images. These different narrative threads will be projected onto the photograph where interactions with the content can take place.

In Story mode, when a particular story is selected and played back, the Lamp can project linked images just at the moment the person, object or keywords is mentioned in the story. A display screen is incorporated onto the base of the lamp. In the event the projector cannot be used due to be ambient factors the display screen can be employed.

# Re-designed concept

[PC Group]



## Laptop media scanner

The PC-owner group wanted the story lamp functionality built into their existing laptops. This avoided buying a separate appliance.

The laptop will have a swivel camera to enable the scanning and recognition of objects and photographs placed behind it. Interface will be via software or using existing function keys on the keyboard. A zoom / tag functionality will allow individuals in a photo to be identified and tagged in order for their story to be recorded or played back. The application will be linked to a web service that allows the option for their memories to be uploaded on to their personal site. This could allow family and friends to access the memories easily and also contribute their own memories to the event. The site could also provide a service to help users produce their memories into a digital biography.

## Sandpit 3: Combating social isolation

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## Sandpit 3: Combating social isolation

Social isolation can become a significant problem in later life as children move away and connections to work colleagues and friends decline. However, new forms of remote communication and social media offer the chance to keep in touch with remote family and friends and socialize in new ways. Exploiting these forms of online social communication could therefore counteract social isolation and improve social support and quality of life.

Two Sandpit workshops were conducted on the 17th and 18th Nov 2010 to explore older people's views on three new forms of mediated communication involving photo-conferencing, social TV and social media.

## Conclusions

- Both live and asynchronous media sharing were attractive to participants as forms of social communication.
- The preferred method of sharing depended on participants' infrastructure and skills but also on the type of media being shared (e.g. photos vs TV vs text).
- Familiar forms of technology (such as desktop telephones) were more attractive to digitally unengaged participants than unfamiliar ones.



# Our concept



## Photo phone

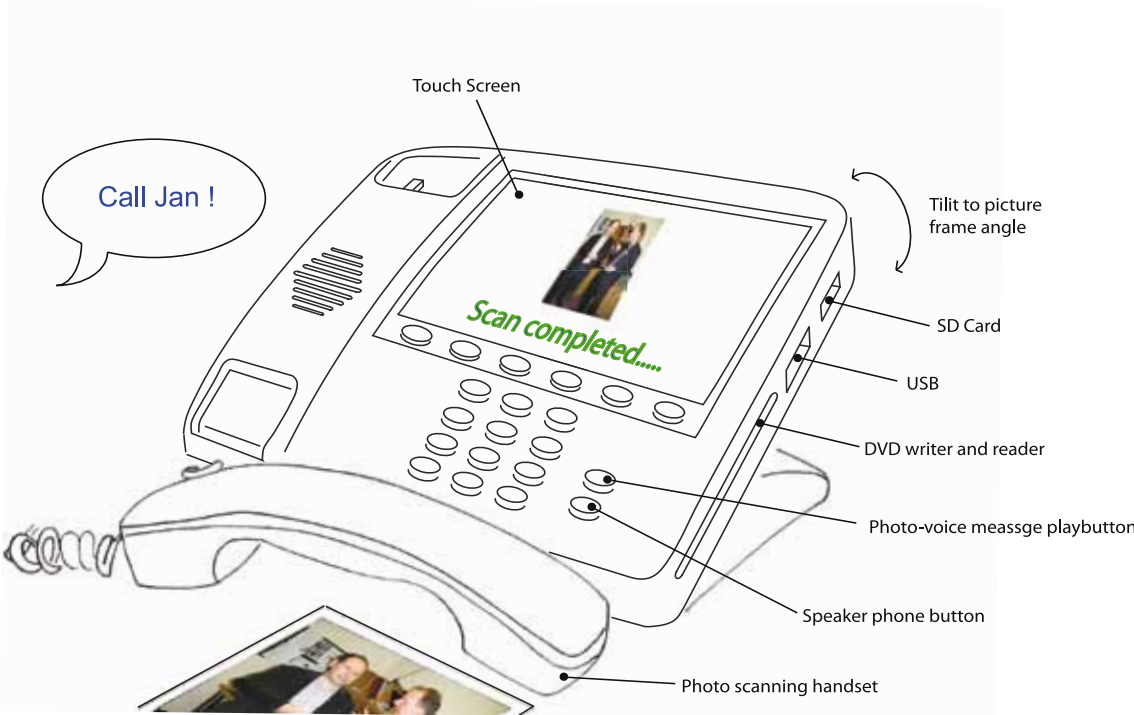
### Description read aloud to participants:

*“Sharing photographs often takes place face to face. In the past this was usually done with printed photos or slide shows. Today it might include showing images on the screen of a camera, mobile phone or computer. But what if the person you want to share with is a long distance away?”*

*PhotoPhone is a telephone with a photo display built into it. You can use it as an electronic photo frame most of the time, and also as a regular telephone. But occasionally you can call someone to share the displayed photographs with a distant friend or family member who has a similar phone or computer. You can scan a printed photograph into it for sharing or insert a card from a digital camera. The selected image will automatically appear on your friends’ phone or computer once they answer your call. You can then both chat and point to the image as if you are sitting next to each other. You can even leave a photo-voice message if your friend is not around to answer your call.”*

# Re-designed concept

[Non-PC Group]



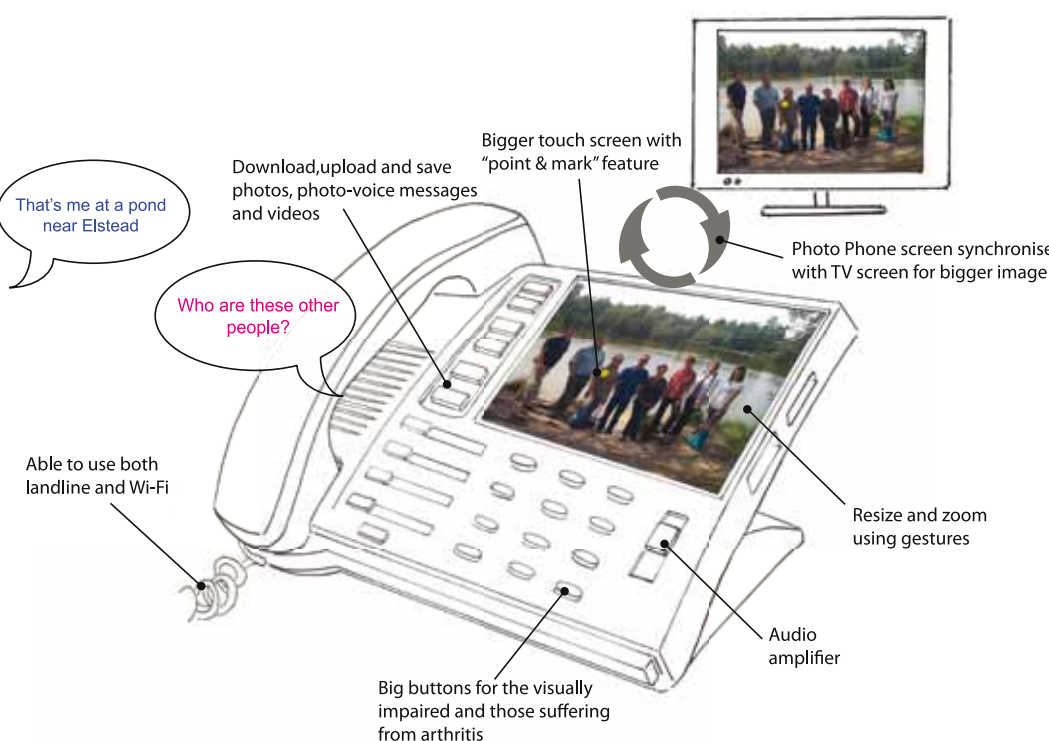
## Photo answerphone with handset scanner

Storage and the way photographs and photo-voice messages are shared were important issues for non-PC users as they do not have computers, scanners or printers. They wanted to be able to scan photographs as well as bigger sized prints like A4 documents, greeting cards or newspaper articles. Lewd photos or photo voice messages and prank calls were highlighted as concerns and they wanted safeguards to prevent their occurrence.

A scanner is incorporated into the handset to allow other media bigger than a six by four inch photo to be scanned. Hands-free operation enables the speaker to talk and operate the scanner at the same time while also allowing the possibility of another person to join in the conversation. Voice commands would augment the hands-free functionality of Photo Phone. Photos, photo-voice messages or videos can be saved into the phone's mailbox if the recipient is not at home or if it is too inconvenient to answer the call. Only photos, videos and photo-voice messages received from recognised phone numbers will be saved. If not consent will be needed. Besides having USB and SD card slots, a DVD reader and writer was also added to allow content to be exchanged with a television.

# Re-designed concept

[PC Group]



## Photo hub

Participants preserved the primary function of the Photo Hub as a telephone in its original form to support quick dial, audio amplifier, speaker and phone numbers memory. The size of the touchscreen display was increased and with the ability to enlarge the photos through gestures, finer details in the photos can be picked up. The screen can be synchronised with a TV allowing a even bigger viewing display. For people who have visually impairments and limited dexterity, big buttons on the Photo Hub will make it easier to use.

The transfer of media could be accomplished through physically accepting memory devices or through wireless transmission. For example videos and photos taken from a mobile phones could be downloaded to Photo Hub wirelessly. In addition, a flatbed scanner could also be connected to the Photo Hub for scanning bigger items like greeting cards and documents.

# Our concept



## TV talk

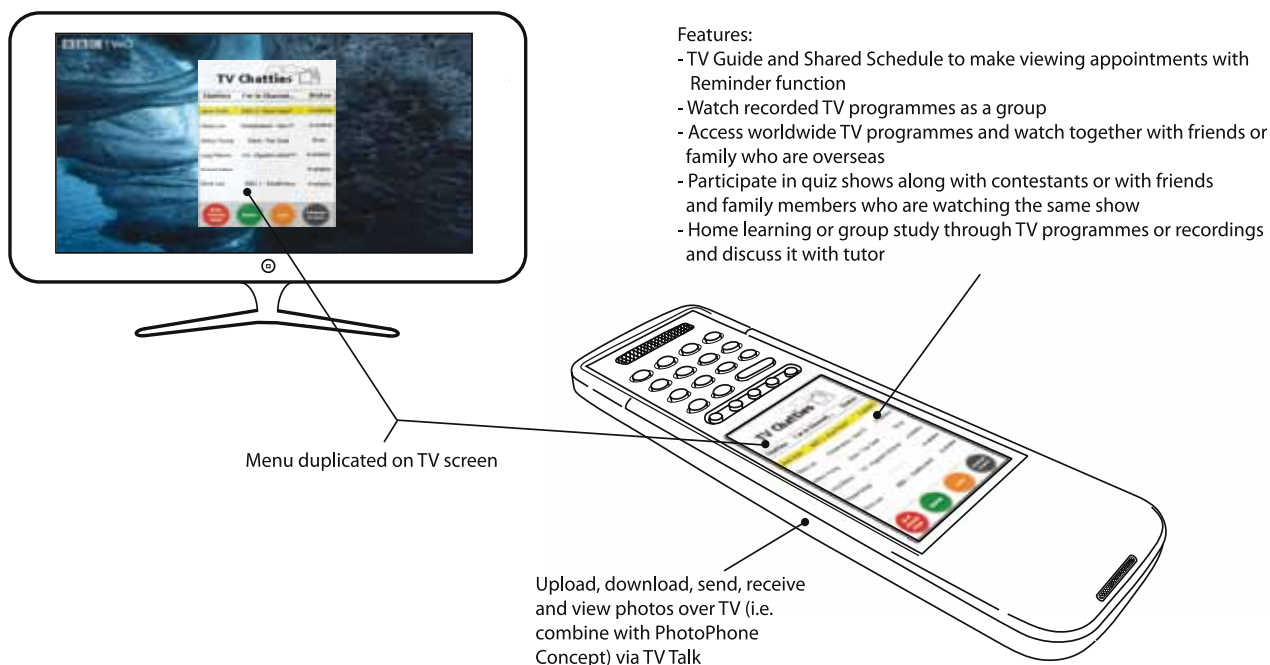
Description read aloud to participants:

*“Have you ever watched a TV programme and wanted to share the experience with distant family or friends? Today you could call them up to tell them it is on, and maybe call them back later to discuss it. But what if you could watch and talk about a programme at the same time, through the television itself?*

*TV Talk allows you to do this by speaking into the remote control. The remote control allows you to invite others with the same system to join you in watching your programme. It could also show what channels your friends are currently watching and allow you make a request to join them. Once a link is established on the same programme, you can chat about it through the remote control. For example, imagine celebrating together when your favourite team scores a goal, or discussing who you would vote for on Strictly Come Dancing. If you get bored of the TV, you can also play games together on a games channel.”*

# Re-designed concept

[Non-PC Group]



## Enhanced TV talk

The TV Talk concept was well-liked and additional features were added to improve the experience. One visually impaired participant commented that the type, colour and contrast of the interface was very good and should be used as a basis for any menu design of TV Talk.

To aid users with visual impairments, the Enhanced TV Talk menu on the touch screen remote control could be duplicated on the TV screen to give a larger display. A hands-free option is also available for you to converse without having to hold the device. Besides showing what channel and TV programme friends or family members are currently watching, you could also access the TV guide to view future programmes and make appointments to watch TV together by sending out invitations to them. Reminders would be sent out automatically as the date draws closer. In addition to watching a live broadcast TV programme together, Enhanced TV Talk also provides the ability to watch recorded TV programmes together as a group.

In addition to playing games such as Scrabble remotely, TV Talk also allows you to participate in quiz shows. Home learning services could also be provided where lessons could be conducted through specially made TV programmes or recordings and discussed together with fellow students and a tutor. Personal media such as photos could also be shared with friends and family by linking TV Talk with the Photo Phone.

# Re-designed concept

[PC Group]



## TV Talk app

It was felt that a smart phone would be a better platform for TV Talk than a remote control because not only can a smart phone make and receive calls, it is also internet-enabled (through wi-fi or mobile broadband) thereby allowing it to take advantage of Internet television and radio services.

TV Talk app for smart phones can be used together with a TV when you are at home or on its own if you are on the move. In the home scenario, the app interface will appear on both the TV and phone. Along with physical interaction, you can also use voice command to get things done for example “Who is watching Blue Planet on BBC2” and the reply from the app could be “Jane and Peter” and you could say “Join Jane and Peter” and you would automatically join Jane and Peter on BBC2 watching Blue Planet together. Friends or family members could access each other’s recorded TV programmes and a calendar allows you to easily schedule group viewing sessions. TV Talk app could also match and link TV programmes and recordings with friends and family sharing the same hobbies or interests. User generated content such as amateur videos could also be made available over TV Talk. Group courses for example ran by the Open University or U3A (University of the Third Age) could be provided via TV Talk app.



# Our concept



## Twitter well

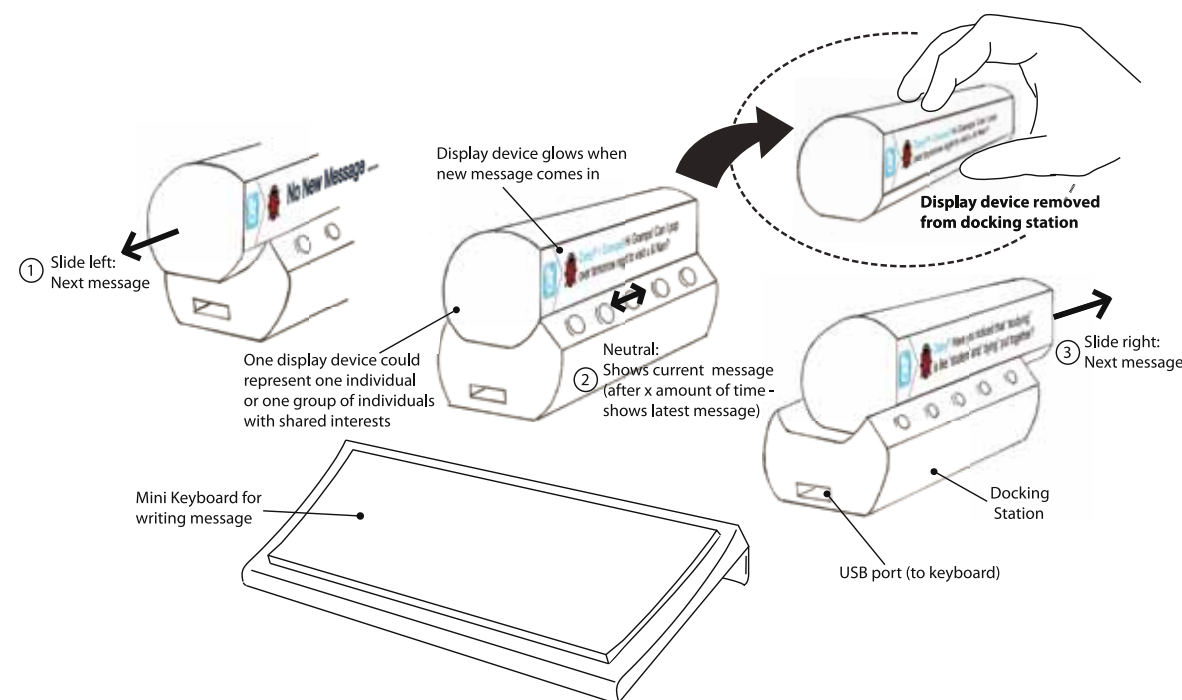
### Description read aloud to participants:

*“Young people are increasingly using computers and mobile phones to tell each other what they are doing in short text messages. These are called ‘status messages’ and are little more than a sentence long. Systems such as Facebook and Twitter circulate these messages to everyone in the same group of friends. To keep up to date with your grandchildren or friends, it might be useful to read and contribute to this kind of discussion in a very simple way.*

*Twitter Well is a set of test tube displays representing the text messages from a few close friends or family members, together with a special keyboard for writing back. Each test tube shows the last text message entered by the corresponding person on Twitter, and can be tilted to show previous messages. New messages are displayed automatically and make the test tube glow until it is picked up. To respond to a message, you place the test tube in a kind of ink well or holder linked to a keyboard. Your message appears on a keyboard display and can be sent to the individual or group at the press of a button.”*

# Re-designed concept

[Non-PC Group]



## Twitter block

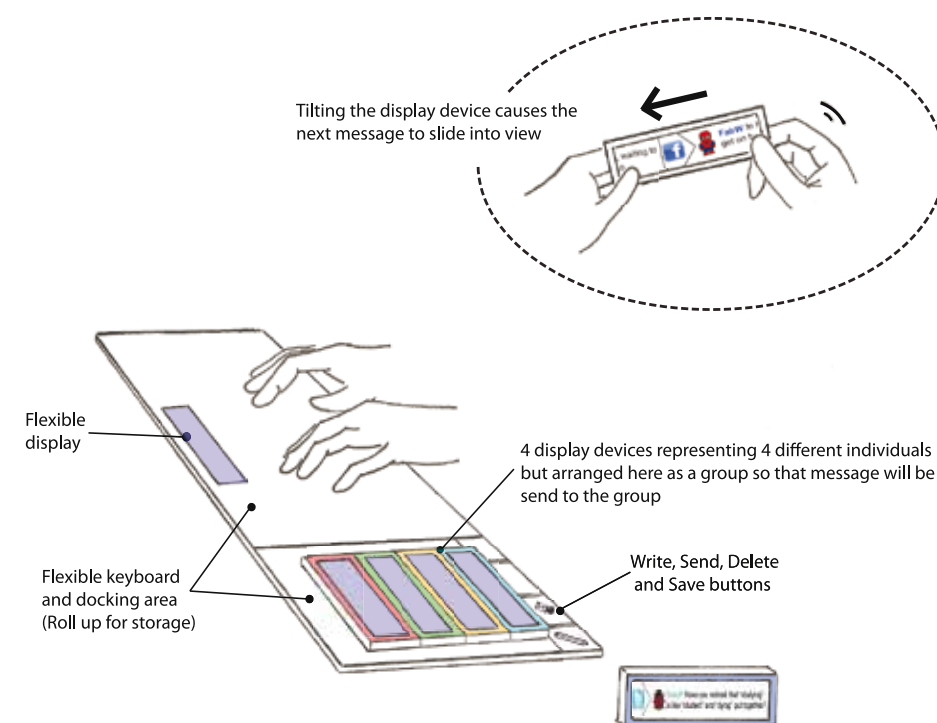
The use of a test tube shaped display was not well received due to its associations with medical labs or hospitals. Reactions were mixed to pairing one display device to an individual friend or family member. Some reasoned that they might end up having many display devices if they have lots of friends and relatives while others see that as an opportunity to sell many display devices. The issue of how to communicate to a group of individuals with shared interests was also explored and this resulted in two concepts exploring different forms and configurations of Twitter Well.

In this concept, the test tube shaped display was changed into one that is shaped like a cylindrical block. The display device can be customised to belong to either a group of people or an individual. A mini/compact keyboard is used for typing messages. When new messages arrive, the display will glow and tipping the device left or right whilst holding it allows you to scroll through the messages. Moving the display device to the left or to the right as it sits in the holder / docking station scrolls the messages correspondingly. A save button and a replay button on the holder / docking station allows you to save important messages and replay saved messages. Besides messages, other contents such as jokes, news, and celebrity gossips can be provided by subscribed feed services.



# Re-designed concept

[Non-PC Group]



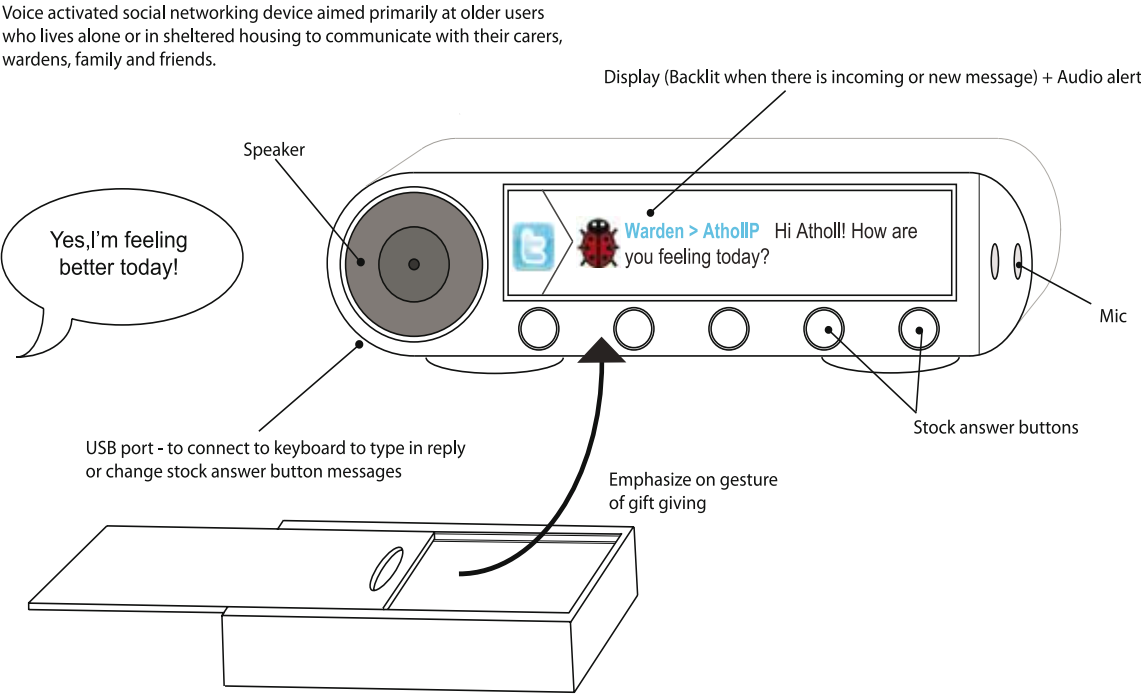
## Connect Blocs

In the second concept, the display device comes in the shape of rectangular block forms. Name, icon, photo or colour band on the display casing can be used to correspond an individual to a display. When new messages arrives the display screen or colour band will light up and glow. Scrolling the messages involves tipping the device left or right while holding it.

To reply to a message from an individual, simply place their display on the flexible docking mat and keyboard, press Write and type your message. After you have finished, simply press the Send button. To write or reply a message to a group, individual display devices are placed together on the docking mat to allow the message to be sent as a group. When not in use, the flexible docking mat and keyboard could be folded up and stored away. Besides displays (i.e. 'Connect Blocs') that represent friends, you can have Reuters, Hello! or Saga 'Connect Blocs' which could provide news feeds, celebrity gossips or latest offers and lifestyle advices.

# Re-designed concept

[PC Group]



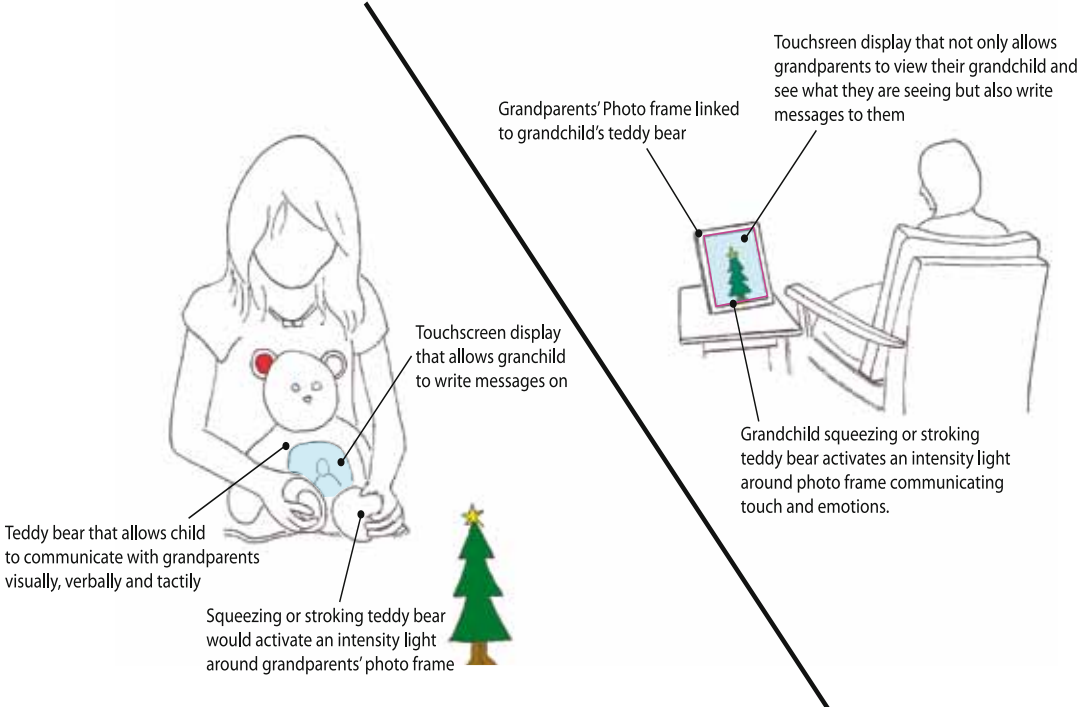
## Network care

The PC group did not find any motivation in using social networks and were concerned about security and privacy. They were more receptive of a one-to-one communication device where messages could be kept private. Most people in the group do not see themselves purchasing twitter well but liked the idea of family members giving the device as a way of saying ‘I would like to keep in touch with you’. Two different concepts were explored. One is ‘Network Care’, a remote active monitoring device and the other is called ‘eSocial Kins’ a set of intergenerational communication devices.

Network Care is used primarily in care homes and sheltered accommodation. It will not only allow family, friends or wardens a quick way to communicate and check on their older family members or clients but also allows the older user to respond to them quickly. Network Care is a stand-alone device with a mic, speaker, display and stock answer buttons (for example “I’m fine today”). When new messages appear, the recipient will be alerted through both a light on the display and audio feedback. The message could be in text or audio feedback. To reply, the user could press a stock answer button or alternatively compose a voice message for the sender without having to fiddle with a keyboard which would be much easier for older people if they suffer from arthritis.

# Re-designed concept

[PC Group]



## eSocial-Kins

eSoical-kins comes in two different forms, a photo frame display which would be suitable for older users and a teddy bear for their younger grandchildren or great-grandchildren. Both the teddy bear and photo frame display contain a camera, mic, touchscreen, and touch and squeeze sensors to allow a range of ways to communicate with each other.

Having a camera and mic allows the young ones to communicate face-to-face with their older relatives but also gives them added opportunities to show and get involve with what is happening in their lives. For example Granny could be part of a dolls and teddy bear tea party! Touch and squeeze sensors embedded in the teddy bear's paws and ears and be manipulated to convey feelings that could be represented as light intensity or movements around the grandparent's photo frame. Likewise these sensors could be incorporated into the touchscreen or edge of the photo frame display and by touching the screen or squeezing the frame, the same effects produced on the teddy bear.

## Sandpit 4: iPad apps for older people

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## Sandpit 4: iPads apps for older people

A conclusion of Sandpit 1 was to point to the attraction of a customizable tablet display like InfoLink, especially for older users unfamiliar with standard desktop or laptop computers. Six months after Sandpit 1, Apple launched its first iPad in April 2010, which embodied this idea in a mass-market product. We therefore devoted Sandpit 4 to the iPad, to give a variety of older people (both non-PC and PC users) some hands-on experience with its basic form and function, as well as envisioning three new apps for feedback and re-design. These apps were based on some of the best ideas to emerge from the previous Sandpits 1-3. From the positive reaction to greater help support in Sandpit 1 we created an iHelp app incorporating adaptive multimedia assistance. From the two preferred concepts in Sandpit 2 (Reminiscence Radio and Story Lamp) we made a MyLife reminiscing app. From variations of the Photo Phone and TV Talk in Sandpit 3 we made a media sharing app called ChatterBox.

Two Sandpits were held on the 27th July and 8th Sept 2011 to find out what older people's attitudes were towards the iPad as a custom computer, and the above new apps for better computing, memory and communication.

## Conclusion

- The iPad/tablet platform was seen to be both attractive and accessible by all participants. The key to its attraction is that it can be customised to a particular set of 'apps'.
- Digitally unengaged participants need a tablet that is self-contained and does not have to interwork with another computer.
- The demonstration iPads were not self-explanatory, still had usability problems and required better forms of help when users got stuck.

# Our concept

## iHelp app



### Description read aloud to participants:

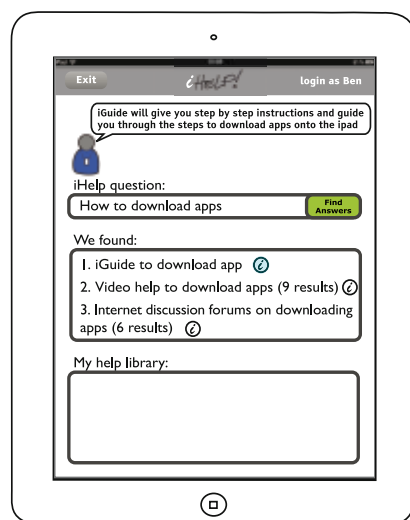
*"iHelp comes as standard app on all iPads. It brings together the help information relating to the iPad device with that for all installed apps. When a user has a question or encounters a difficulty, he/she uses iHelp to search for a solution from its own dedicated database and the Internet. Step-by-step instructions are provided by a virtual assistant called 'iGuide' which can volunteer advice when it thinks the user needs it, or respond to requests for advice when the user makes them. iGuide can give spoken, textual or demonstration-based advice on carrying out particular tasks or getting out of trouble. Users can choose to see the full set of instructions for a task or follow the first instruction before the next one is presented. They can also save or bookmark advice in their own personal iHelp library so that they learn from their mistakes and discoveries.*

*If a satisfactory solution cannot be found, the user can use a feature in iHelp that allows them to describe and record the problem they are encountering. The recording is then sent to a dedicated support team to handle the problem. Once a solution is found, a video or iGuide instruction will be sent back to the user."*

# Re-designed concept

[Non-PC Group]

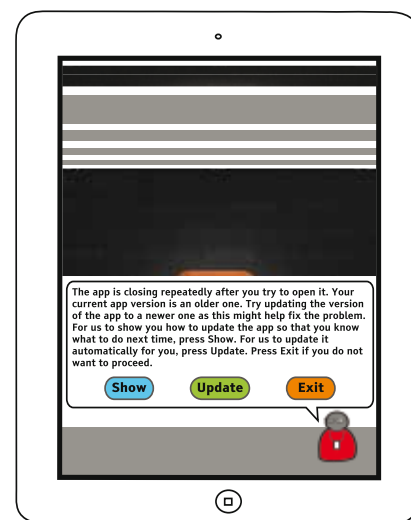
## iHelp tutor



Jargons such as 'video instructions' and 'forum' were changed to become more descriptive. Additional explanation is given through



When going through iGuide where a 'step-do-step-do' approach is adopted to help solve a problem, participants wanted the ability to record the process and save it in their help library so that they can refer to it if they encounter the same issues again



After 3 or 4 unsuccessful attempts in opening an app (in this example the app upon opening keeps closing down), the help system detects something is wrong (in this context the user keeps repeating the same steps to open the app and the outcome is the same - app close down) and offers options to help the user fix the problem.

Using the iHelp app was considered to be like having your computer tutor sitting next to you, advising and showing you what to do. When you get stuck you can 'ring a bell' to summon the tutor. Hence the group re-designed the app as an 'iHelp Tutor' who uses simple and descriptive language that older people can understand. For example, 'Forums' could be called 'Internet Discussion groups'.

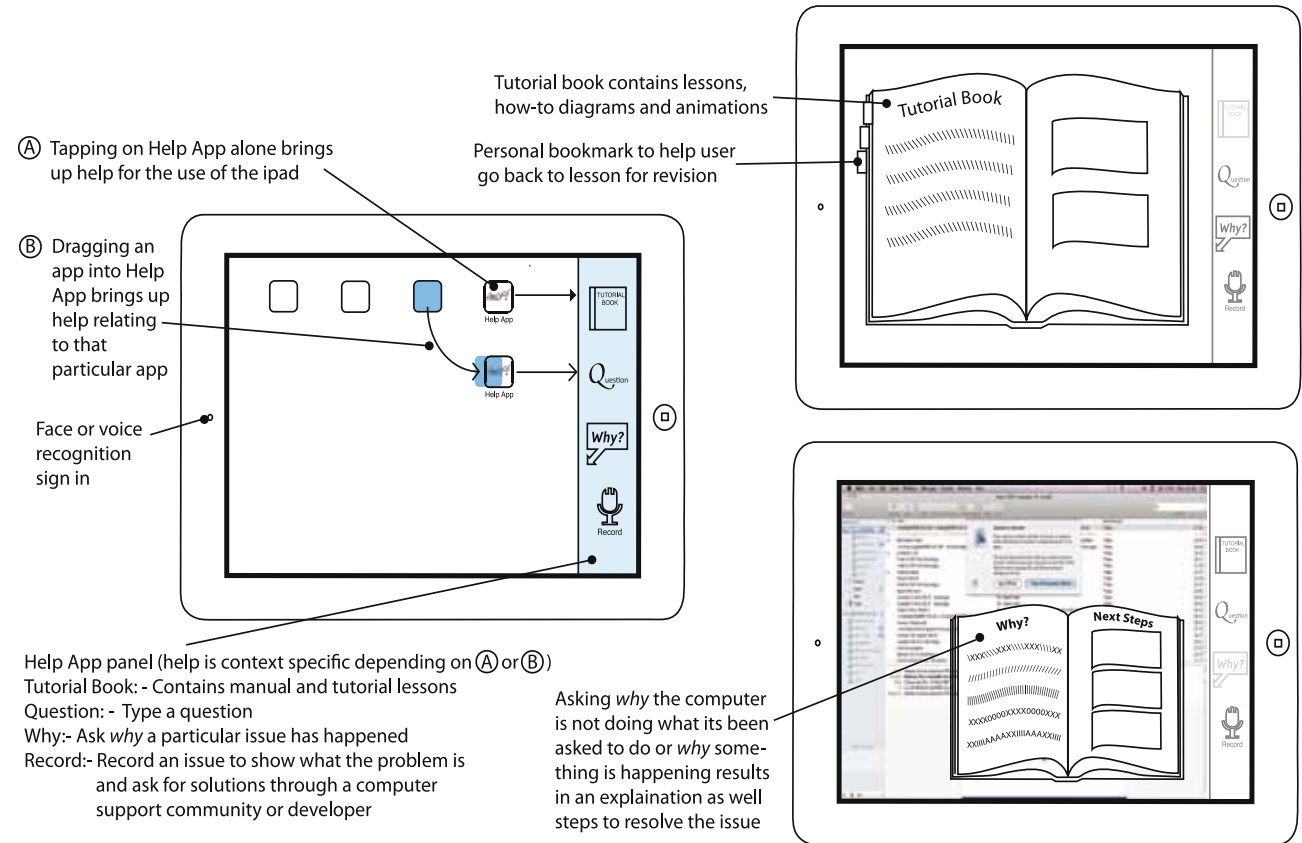
If you press the wrong button despite instructions given, iHelp Tutor will tell you that you are heading towards the wrong direction and prod you towards the right one. Other options will be available to allow you to return to the beginning or backtrack what you have done. The whole process can be recorded and the recordings will form part of a video collection detailing the issues you had and the steps you have taken to solve the problem.

Help is context sensitive. For example if a particular app keeps shutting down every time you try to open it, iHelp Tutor senses something is wrong and comes in with positive instructions and options to help you solve the problem. A service could collate all your problems and send them to the developer to debug and help come up with a new version of the application.



# Re-designed concept

[PC Group]



## Guide Book

The PC group redesigned the interface and used the metaphor of a guide book as an inspiration. Using voice or face recognition to sign in, the Guide Book app operates in two ways. In the first way, tapping on the Guide book app icon would bring up help on the using the iPad. The second way involves dragging other apps and dropping it onto the Guide Book app icon, which will bring up help relating to that app. Help is managed through a Guide Panel, which can be left open whilst the user is using other apps.

Four functions are available on the Guide Panel and they are “Tutorial Book”, “Question”, “Why” and “Record”. Depending on which way you chose (or help you require) at the beginning, “Tutorial Book” will bring up any manual or tutorial lessons pertaining to the operation of the iPad or that of a particular app. “Question” allows users to type in any question or issues they have depending on the context (i.e. iPad or app). This will bring up any solution that has been found and will lead the user through step-by-step instructions. “Why” allows users to ask for an explanation why something is happening for example if an error message appears or why it is doing a certain operation (for example not saving a particular file). In addition, advice on what the user should do next would be offered. The “Record” feature allows users to explain and screen record the issue or problem they have and send the video to an online help community, experts or app developers to have their problem solved. Instructions will then be sent back to them via the Tutorial Book.



# Our concept



## MyLife story

Description read aloud to participants:

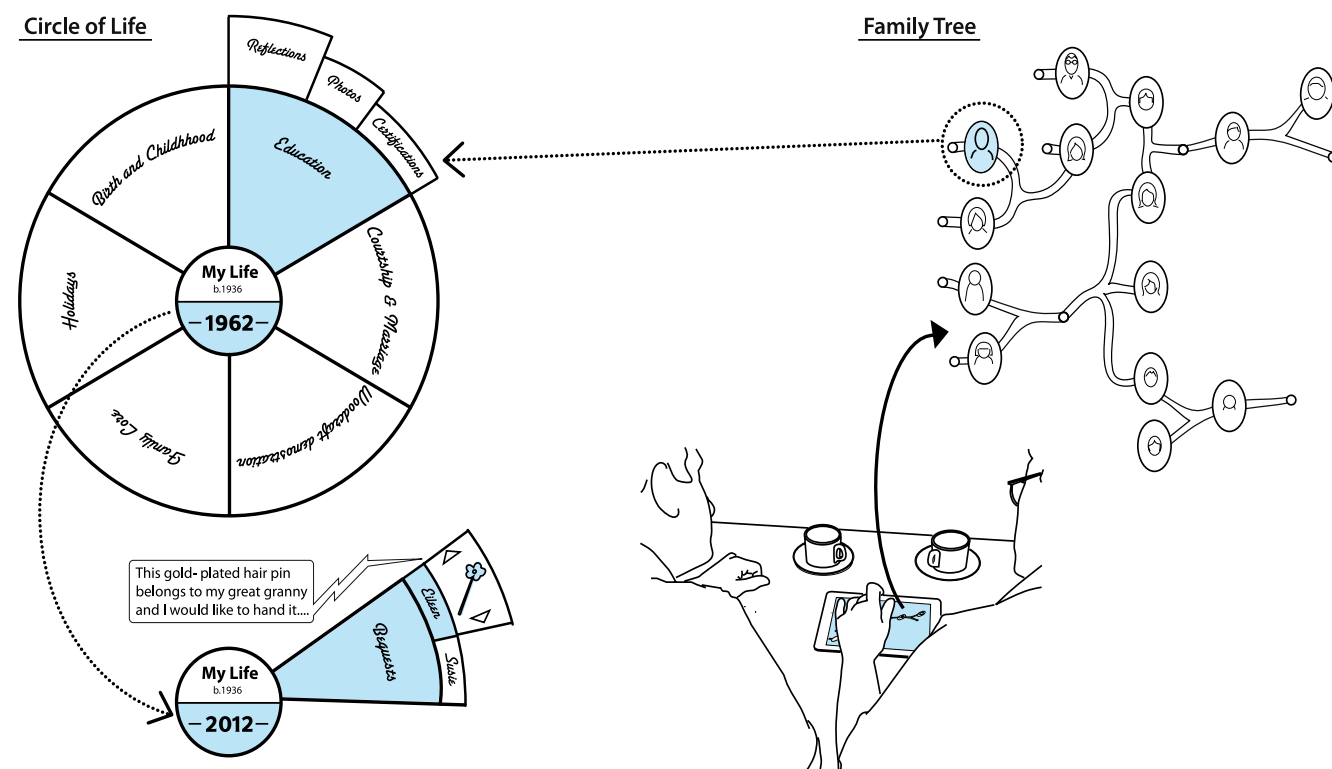
*“The iPad can be used to take or display pictures, to make sound recordings, and to store music and videos for users to enjoy. However, all of these media are usually handled in separate applications and are difficult to bring together, particularly to tell a story.*

*The MyLife story app allows users to tell their own life stories in pictures, sound, text and video. They can do this by capturing and arranging personal media on a timeline of their life. They can record individual stories in short clips or episodes pinned to the timeline using the iPad’s built-in microphone. The built-in camera can also be used to take photos of related objects and people, or capture printed photographs. Recordings and photographs can be linked to each other and to music and video associated with the story. Other people can also record their own accounts of the same events, or new recollections which build up in layers around the timeline.*

*Once recorded, stories can be played back from the timeline itself, or by taking another picture of a captured object or photograph. MyLife story will recognise the image if it has already been captured, and trigger any associated story automatically.”*

# Re-designed concept

[Non-PC Group]



## Living family tree

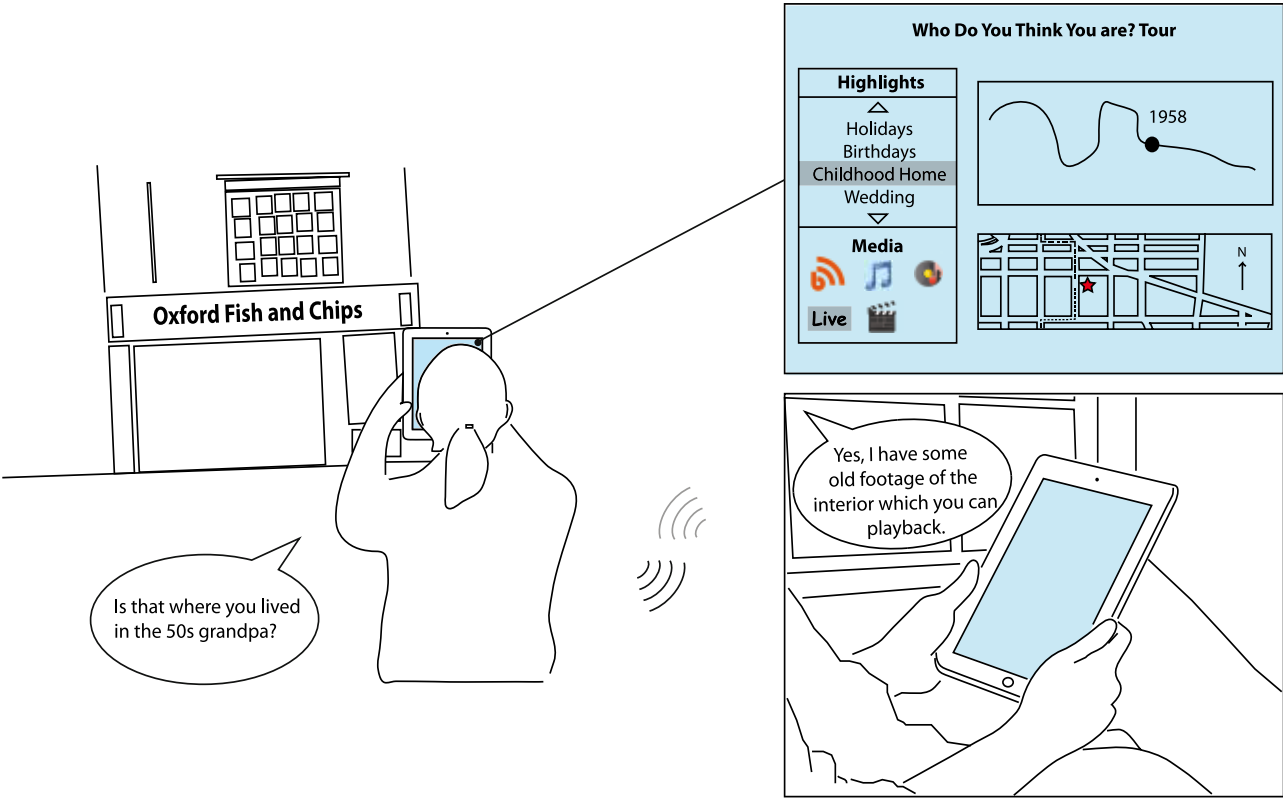
The group wanted the MyLife app to be based on the family rather than on an individual. They explored and co-designed a new interface to represent the family around activities, events and life stages.

The Living Family Tree is an interactive app for capturing and retrieving life stories and digitized media of your family members. Photographic or graphical portraits of people in your family are represented in an organic-like branch and node concept giving an overview of the relationship between members of your family. You can access the life of an individual by tapping their portrait on the family tree. This opens up two interactive concentric circles. The inner circle is like a year dial that allows you to move along the timeline of the person's life. Depending on the year you have in the inner circle, you could bring up different topics pertaining to the person's life and these are represented as segments on the outer circle. Topics could range from family lore to holidays and demonstrations of recipes and cooking to handicrafts. Touching the segments would reveal any digital media it contains or further categorizations of the topic.

Using the iPad's onboard camera and mic, digital media created could be videos, audio recordings and photographs. A screen recording facility also allows you to capture any content on the screen such as live video interviews you make with other family members. Digital tags, post-its and notepads are provided for you to write and link information to the digital media.

# Re-designed concept

[Non-PC Group]



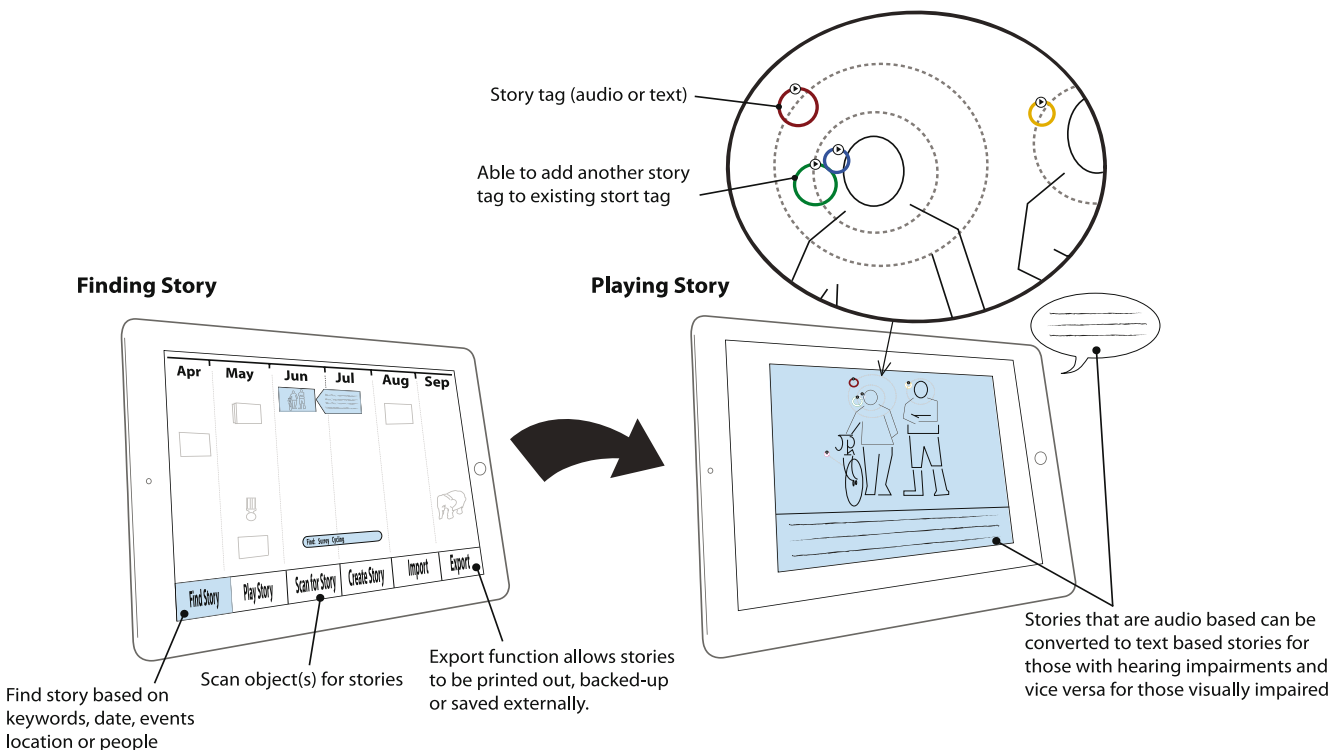
## Life journey

Some participants in the Non-PC group thought that the MyLife App concept was a bit like a reminiscing table where media and artefacts are brought round a table and stories are told and shared. They felt this can become a static activity and the iPad's portability should be exploited.

Capitalizing on the TV programme, "Who do you think you are?" and the portability of the iPad, participants redesigned MyLife App into a tool that can make a "Who do you think you are?" type of programme of yourself. By making a programme of your life, a younger relative could follow your life journey using the iPad. For example, they can be taken along a village tour of your birthplace, visiting the school you attended or the house you stayed in. They can hear and follow your recorded narration of events that happened in the school or house as well as access any photographs or video footage you have of that event. If they have any queries, they can even get hold of you and ask you about it via the device.

# Re-designed concept

[PC Group]

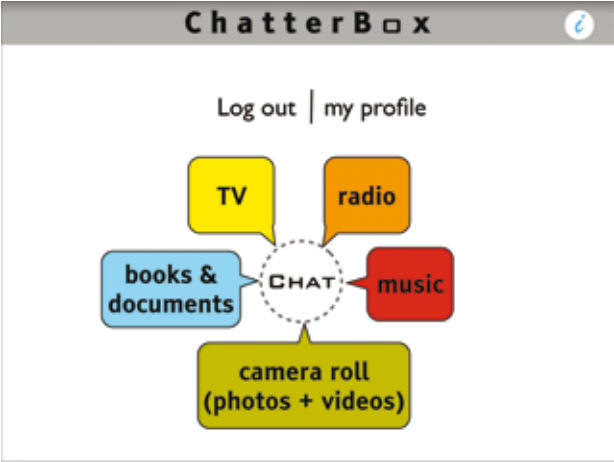


## Story book

The PC group liked the concept of MyLife and felt that the iPad with the MyLife app should be part of the family inheritance; a digital equivalent of the family bible or photo album. Archival and inheritance issues were brought up concerning where and how the information should be backed up if the iPad or app fails. Information security as well as accessibility issues relating to how the hearing and visually impaired could use the app was also considered during the co-redesign session.

Core features such as creating and importing stories (or other media from other sources), scanning recognised objects and playing their attached stories were retained by the group. New functions added were the ability to find stories based on keywords, dates, events, people or locations, and being able to export the stories so that it is backed-up with the option of printing the content out. Different levels of information access will be assigned for family and friends. Besides being able to record stories verbally, you can choose to write the stories as well. A special function that would be useful for the hearing or visually impaired allows an audio story to be converted to text and for a text-based story to be read out. What if someone's recollection of the story is incorrect? Instead of editing the original story other versions can be add or linked to it providing different perspectives.

# Our concept



# ChatterBox app

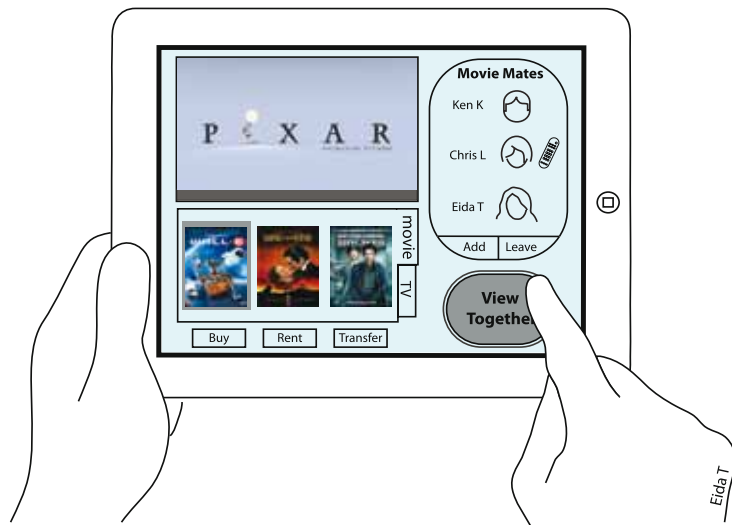


Description read aloud to participants:

*“ChatterBox is a way of sharing a variety of media on a smart TV. It allows you to upload personal media such as photos, music, video and e-books to a digital library including recorded TV and radio programmes. Users can select any kind of media to share live with remote family and friends who have a similar device. A group conference call can be started around a particular media selection and participants can discuss the items by voice. Additional media can be introduced by other participants at any point, and media sharing sessions can be recorded for later reference.”*

# Re-designed concept

[Non-PC Group]



## Video talk

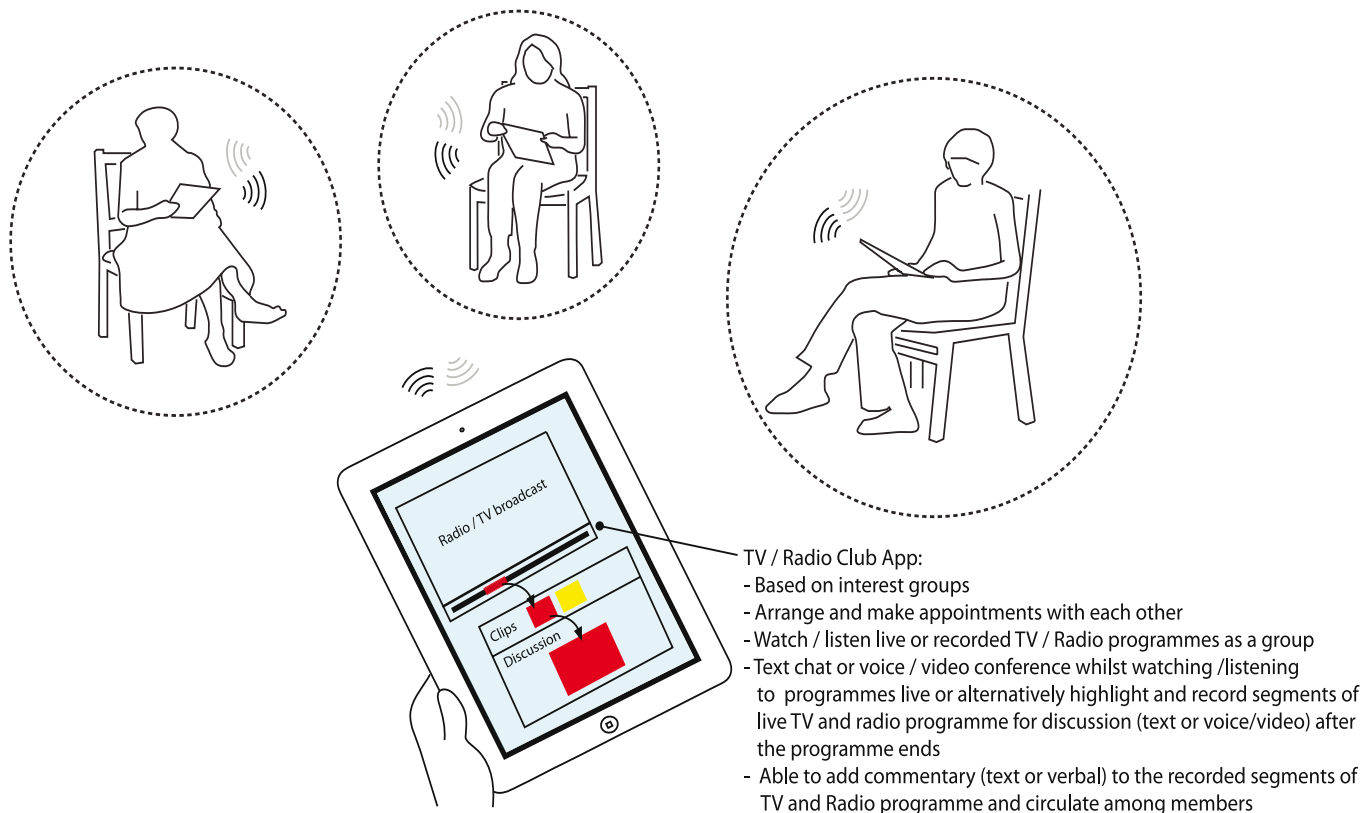
Participants in the group felt that social interaction through the TV was particularly suited to programmes such as sports and quiz. In addition, family videos and movies were also brought up as suitable media that could be viewed remotely with one another. These formed the focus of a video sharing app called Video Talk.

Video Talk is an app that allows you to talk and watch movies, family videos and TV programmes at the same time remotely with friend and family members. To watch a movie together, you can buy or rent a movie or select it from your library, add the people you want to watch it with (provided they are on the Internet and have the same app) and press 'View Together'. For personal family videos, you can transfer them to your library, add the people you want to watch it with and press the 'View Together' button.

A virtual remote control is available for you to control what you are watching but like in a real room setting, you have to negotiate who gets to handle the remote control with your friends or family members as it can only be in the hands of one individual at any one time.

# Re-designed concept

[PC Group]



## TV and radio club

Reactions from the participants in the PC group were mixed. Some do not see themselves using Chatterbox at all, while others would use the photo or book sharing but not the social TV aspect of it. All participants however agreed that Chatterbox might be of more benefit to people who are housebound. Some felt that it might appeal to them if Chatterbox was redesigned as a radio or TV club discussion forum.

Comparable to a book club, subscribers can join or set up a club with people they like, share similar interests or who are fans of a particular TV or radio programme to discuss about it during or after the broadcast. Discussion could be done through the use of text or audio/video conferencing. Selective highlighting and recording of clips is also supported to allow people to circulate and discuss them afterwards.

# Acknowledgements

The SUS-IT project was funded by the New Dynamics of Ageing programme under grant number RES-353-25-0008. The project as a whole was led by Leela Damodaran and Wendy Olphert at Loughborough University and further details can be found at: <http://sus-it.lboro.ac.uk/>

The drama in Sandpit 1 was written and directed by Maggie Morgan of MMTraining Ltd and performed in Dundee by Iain Wotherspoon and Jane Nelson-Peebles. Filming was by David Goodall and colleagues at Soundsmove Ltd. Subsequent filming by Christopher Lim, Amr Ahmed, Jocelyn Spence and Kristen Eglinton.

The original concepts for Sandpit 1 were designed by Sarah Woods and David Frohlich, while the subsequent starting concepts for Sandpits 2-4 were designed by Christopher Lim and David Frohlich. New (re-designed) concepts were generated by the following groups of participants, facilitated and co-designed by David Frohlich, Sarah Woods, Christopher Lim, Amr Ahmed and Connie Golsteijn:

Sandpit 1- The Dundee ICT drop in Centre, University of Dundee

Sandpit 2 - The Riverside Café day Centre, Age Concern Guildford

Sandpit 3 - North Place day Centre, Guildford Borough Council

Sandpit 4 - Dray Court Computer Drop-in Centre, Age UK Surrey and U3A Guildford

Production of the catalogue was based on a template by Abi Durrant, with layout and typesetting by Christopher Lim. Sketches by Christopher Lim. Photographs by David Frohlich and Christopher Lim.

We would like to thank our colleagues on the SUS-IT project and at Digital World Research Centre for the many discussions and ideas that influenced our designs, and all participants who gave so generously of their time, enthusiasm and ideas.





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